DECEMBER 1991 £1.95

SINCLAIR QL WORLD

Software File

PERFECTION 2.04
Games from GCH

Starts This Month

The New User Guide

QDOS KEYWORD INDEX

Plus *Super Toolkit 2...Minerva...*
Turbo Toolkit extras

THE QL IN NORTH AMERICA

M.C.M.
QUALITY
EDITORIAL

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NEW QL GENEALOGIST Second Edition NEW

AVAILABLE FROM NOVEMBER 15TH 1991

DILWYN JONES COMPUTING are pleased to announce a new version of the popular QL Genealogist program written by Chris Boutal. Many new features have been added, some as a result of what you, the customers, have suggested to make this already excellent program even better!

Details of the major enhancements are shown in the column to the right, but there are many more minor improvements too!

QL Genealogist remains just as wonderfully easy to use as it always has been. There is no need to worry about having to re-type all your data into the new version as it is still fully compatible with data files from the previous version.

If you are currently using an Archive-based family history and family tree program (e.g. the microdrive exchange Family Tree program) and you wish to move up to the Genealogist program, the author will attempt to convert your Archive _dbf files to Genealogist format for a fee of only six pounds, to save you a lot of retyping when you start using QL Genealogist!

To give you some idea of how good this version of Genealogist is, here is what John Shaw said about the original version of QL Genealogist in the January 1991 issue of QL World:-

"Chris Boutal has produced a family researcher's dream . . . guaranteed to make even the most fastidious and exacting Family Historian go wild with delight . . . Is it good? Well, a friend of mine is going to buy a QL just to use this program, it's that good."

* New GEOGRAPHY section helps you trace your ancestors from place to place. Export to Easel.
* Improved Research Reports – programmable columns.
* Improved Notes facility, including a "Notes Available" indicator per subject.
* TREE output – can be annotated, saved and exported to Abacus if required.
* Global Edit facilities.
* Still runs in 384k (or more) memory.
* ST-QL emulator compatible.
* Compatible with original QL Genealogist data files – no need to re-type your data!
* Upgrade terms available – see below!
* Conversion service available for users currently using Archive to record their family history and family tree.
* Many more minor improvements too detailed to be listed here.
* Printed manual, with a tutorial chapter to help you learn to use it smoothly from day 1.
* For further details of the original version of this program, see QL World Jan. 1991, page 44.

PRICES

QL Genealogist, Second Edition	**(on disk only)**	**£30.00**
Standard QL Genealogist, while stocks last	**(on disk)**	**£19.50**
	(on 2 cartridges)	**£21.50**
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COCKTAILS WAITER

Christmas is coming, as we all know! If you keep drinks in the house over the festive season, why not let this program conjure up a cocktail or two when you hold a party or have friends and relatives round. A database of 400+ recipes is supplied. Prices etc. in our advert on page 2 of this issue.

FLOPPY DISKS, LABELS, ETC.

Make sure you have enough disks, labels, boxes, etc. to last over the Christmas and New Year period – contact DJC for your QL requirements. See our advert on page 2 of this issue for full details of prices and the range of items that we sell.

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SINCLAIR QL WORLD

Editor
Helen Armstrong

Production Controller
Jayne Penfold

Designer
Jeff Gurney

Advertising Manager
Jason Newman

Magazine Services
Yvonne Taylor

Advertising Production
Michelle Evans

Group Advertising Manager
Lynda Elliott

Group Editor
John Taylor

Publishing Director
Wendy Palmer

Group Deputy Managing Director
Ray Lewis

Group Managing Director
Peter Welham

Sinclair QL World
Panini House
116-120 Goswell Road
London EC1V 7QD
Telephone 071-490 7161
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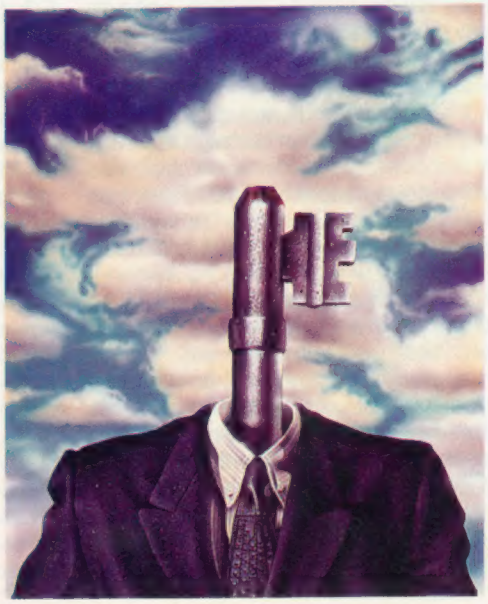

NEXT MONTH

We are still restraining a review of PROSPERO PASCAL for programmers, a ONE MAN'S SYSTEM about Archive, lots of reviews including a new public domain collection, and some programs. We are also lining up book reviews and a Christmas present list!

TROUBLE A PROBLE

Backups and bug detectors, Qimi fixes, EHD from Miracle, and replies from Bryan Davies

Text[87] should now be available in its Plus-4 version, for all QLs and the Atari QL emulator. There are many changes from version 3, among which are a revised, two-level menu structure (simple and advanced), forward and backward searching, multiple windows onto one document or for several documents, on-screen help, revamped dictionary word selection, and the ability to accept longer subdirectory names. By now, *text*[87] is a well-established and mature product, with many user suggestions having already been taken account of, but all the new features are very welcome and useful. A hands-on report on the new version will follow shortly.

QL users really have a very good range of wp programs available to them now, something for every occasion, except perhaps the almost-dtp situations where greater flexibility and convenience of importing, editing and positioning graphics is needed.

The back-up program *WinBack* from Dilwyn Jones Computing (DJC) has been upgraded to version 1.11. Several bugs have been fixed and a change made, which will be helpful to users of the PC emulator *Conqueror*, in that large files can be skipped during a backup; this caters for the one large file created on hard disk for use by MS-DOS. While this can be considered as being, effectively, a partition of the drive, Qdos sees it as a file and will attempt to back it up – however many megabytes it may be in size – with the original version of WinBack. Purchasers of earlier versions can obtain V1.11 by sending their current program disk with a stamped, self-addressed envelope, to DJC. A version 2 is under development; it will allow files to be split across disks and compressed, thereby reducing the number of disks required for backup.

Backup backs out

One problem which came to light with the review copy in subsequent use was that a partially completed backup could leave the user high and dry if there was a stoppage because of WinBack coming across a corrupted file on the hard disk. When this happened, the backup was aborted, and could not be restarted because the files which had already been backed up successfully had been marked as 'archived', causing them to be ignored on subsequent backup attempts (until such time as they had been modified). This point has been made to DJC and it is assumed a fix will be implemented.

Corruption is normally an unlikely event with disk drives, but it has occurred several times in recent weeks with the hard disk on my system. Two instances were discovered by DJC programs – WinBack and *The Gopher*. Another instance, and a 'possible', were flagged by a backup routine included in the Quanta Sub hard disk utilities set. Some less-technically minded readers may be under the impression that 'corruption' automatically indicates a useless file, but this is not true. You can have errors in files which do not show themselves for a long time. A simple example would be where one character of the text of a menu has been changed in a program file – eg F1 changed to F2 on the *Quill* menu display – and there would be no detrimental effect on operation of the program. You can also have a detrimental effect on operation of the program. You can also have a defective area on a disk; this may allow copying to it, but cause trouble when a file is read from it. This is a matter which usually doesn't concern floppy disk users (if a disk persistently gives errors, you get rid of it) but it is obviously more serious for hard disk users. It is possible to detect and mark bad areas on disks but I don't know of any easy way for average users to do this. Has anyone got a simple method? Help may be forthcoming from Tony Tebby; it is understood he is writing a suitable utility.

For anyone who is having trouble on a system which has both a Qimi mouse interface and a *Gold Card* fitted, and hasn't heard of a solution yet, Miracle Systems and Phil Borman of Quanta have advised that the solution to one problem is to remove the back-up battery from the Qimi and connect together the two terminals to which the battery was connected on the board. That is, remove the back-up function from the Qimi and reconnect the line which was previously broken for insertion of the battery. There is apparently some conflict between the two interfaces when checking the supply voltage (they have different reference levels). Should the GC be removed, or the Qimi fitted to a non-GC QL, at a later date, the battery has to be refitted if the back-up clock is required.

A different problem has been noted when the GC and Qimi are together in a system which is **not** using *Qpac 2*; the mouse apparently sends signals whenever it is moved, regardless of whether or not there is a program present to make use of them, and these 'spurious' signals seem able to cause crashes when various programs are running (one instance was a SuperBasic boot for QPac2!).

A suggestion for trying to deal with unsatisfactory disk drive behaviour (eg with 1/3-height 3 1/2in Mitsubishi drives) after a GC is fitted is to vary the FLP_START parameter (if your disk interface has this command); a suggested value is 40. One snag to doing this is that you either have to type it in before the drives are accessed, or put it into a microdrive cartridge boot file, and this seems a bit defeatist for those of us who want our systems to start up, fully operational, automatically.

Miracle go Extra High

Miracle Systems have decided to sell ED (extra-high density) floppy drives as standard, dropping both DD and HD drives. The ED drives can handle DD, HD and ED disks, so there was no real technical reason to continue supplying the other drive types. The only questions had been availability and price. It would not have been unreasonable for Miracle to charge more for ED drives than for HD, but they have chosen to keep the price the same (£175 in the UK), and their customers will no doubt appreciate that. The snag at present is that the promised delivery date for ED drives has been put back (by the manufacturers) to about November.

With the worry about the price of ED drives out of the way, the prospective purchaser can concentrate on the price of disks, to decide which type to buy. Miracle hope to be able to sell ED disks at a considerably better price than I have seen quoted previously. There are a couple of obvious yardsticks for judging how reasonable the price level is – how it compares

SHOOTER

M S O L V E D

in pence/kilobyte with storage on a hard disk, and how it compares in pence/kilobyte with storage on lower-density floppy disks. The only hard disk currently available to most users for the QL is the 40 MB Miracle one, which costs £449 total in the U.K., that is, a simple pence/kilobyte ratio of 1.1. Using Miracle prices again, dual 3½in high density (1.44 MB) floppy drives have cost £175; the pence/kilobyte ratio here, for enough disks to hold 40 MB, is about 0.47 based on disks costing 70 pence each, and buying 28 of them). The comparative figure for ED looks like being about 0.50 initially. The above figures are rather higher than they would be for drives bought from Miracle, as the latter include 10 disks in the price of each dual drive set bought. All the figures assume you already have a disk interface into which the drives can be plugged. Buyers who don't fancy the current price of ED disks can carry on using DD or HD disks, since this type of drive can cope with all three types of disk.

Floppy vs hard disk

There are some points to remember when making this comparison. Once a floppy drive has been paid for, the pence/kilobyte ratio drops greatly as more disks are bought, whereas the ratio is unchanging with a hard disk. Additional HD floppy disks cost about 0.05 pence/kilobyte; for ED disks, the ratio would be 0.09. One interface handles just one hard disk, whereas it may handle up to twenty-four floppy drives, making the cost of a back-up very much lower for floppy than for hard disk.

Careful calculations of the pennies may be washed away by other considerations, though. Dual floppy drives take much less space and are more easily located than the hard disk. The ED drive is said to be about as fast as the hard disk, removing one of the usual advantages of hard disk. DD and HD floppy disks are available anywhere, at competitive prices, whereas ED disks are hard to come by and not yet heavily discounted. DD disks are 'universal coinage' – they can be swapped with anybody else who has a 3½in drive.

The figures indicate there is merit in buying ED drives rather than hard disk, but HD (and DD) disks are somewhat more price-competitive. At this stage, the obvious choice would seem to be to buy extra-high density drives but uses DD or HD disks until the price of ED disks comes down further. The ED capacity allows several big programs to be fitted onto one (system) boot disk. The drives are physically almost identical with DD/HD ones, so don't take up much space. DD and HD disks can be used on many other computers – eg current PC types – but ED disks are not commonly used on other computers as yet. Considering all the money that goes into PCs, it is surprising to find us being able to buy a drive which is not yet available to PC users in the UK.

Small differences

The visible physical differences between the three types of 3½in disk are small. Looking at the disk as you see it when inserting it into the drive, all three types have a small square cutout at the left-front corner, for the write-protect function. HD disks have the same size of cutout in the matching position at the right-front corner, which is used by an optical detector in the drive to establish that the disk is HD. ED disks have this same cutout but it is located slightly further down the right side towards the rear corner; that is, it is not symmetrical with the write-protect cutout as it is on HD disks. ED disks may also have a different magnetic coating to DD and HD.

Miracle Systems mentioned that they sometimes get calls from customers, referring to comments made in this column, and they have to point out that what was said is no longer valid. Bear in mind that whatever you read here was written four weeks or more before you see it, and a lot can happen between despatch of the column and arrival of *QL World* on your doormat. What *is* certainly a valid point is that Miracle have shipped only the 16 MHz versions of the Gold Card; rumours suggesting this is not the case should be ignored.

There have been a few critical comments about the Minerva rom in this column. The reason for them was not any objection to the idea of Minerva, but the fact that it was causing too much trouble with existing software. As of mid-September, I have been assured that a development stage has been reached where it is considered safe to send out an upgrade to existing users of versions prior to 1.80; see the TF Services adverts for details of cost (believed to be £5 or FOC, depending upon your version). The current Minerva version 1.92 is said to be compatible with the current Gold Card rom version 2.22. The conflict with the GC apparently did not apply to the Mk I Minerva – only to the Mk II.

In the not-so-deliberate error department – apologies to Alf Kendall and anyone else who spotted my error (October *Troubleshooter*) in saying the Atari ST had a 68008 CPU chip. As I had prefaced the number by '16-bit', the chip number should have been 68000. My mind will never give up the logic that the higher the number the better the chip, as with 68000, 68020, 68030, 68040, etc. . .

Remember the Data Protection Act? I am assured that one of the side-effects of it is that suppliers who do not wish to register under the Act may not retain details of their customers' telephone numbers. It is ok to keep name and address together, but not to add the 'phone number to them. The corollary of this is that you should always give your 'phone number when leaving messages on suppliers' answerphones. Don't expect them to have your number to hand. Having just been played a tape of a message from a customer, threatening to keep on calling a supplier until an answer is received, I can sympathise with the supplier. The caller gave no details of the reason for the call, no address and no 'phone number – just his name.

Readers' letters

The Serial 8056 printer might well come out top of the list if we checked what subjects had produced most correspondence with *QL World*. That shows how successful Dixons were in selling QL systems when they were throwing in the 8056 'free' (what was the total price – £129?). The letters now all deal with the matter of using fax machine paper in place of the original type; it seems likely the paper is no different. The printer does appear to need a paper roll with a core diameter of 13 mm (½in). There seems some debate about whether or not the roll width *must* be 216 mm; most writers say spacers are needed if 210 mm-wide rolls are used, but at least one user says he has no trouble with that size, and doesn't use spacers. Presumably the 50 m fax rolls are too large in diameter to fit the 8056, but 30m ones are acceptable. One suggestion is to search

TROUBLESHOOTER

out bulk users of fax paper and scrounge their cast-off rolls (assuming they throw away rolls before they are emptied – an expensive procedure, at about 3p per A4 sheet.)

Tony Morgan of **Sensitised Coatings** (see *Information* box) advises looking for **Sharp** fax rolls, as they are 216mm x 30m, on a 1/2in core. Their own price to QL users for three rolls is £10 plus postage and vat; the price per roll will be less if more than three are ordered. For anyone who has weakened and bought an Amstrad 9600 fax machine at the current low price, their price for 210 mm x 30m rolls on a 1in core is £36.66 including vat (postage paid) for a box of 12. That is, £2.60 per roll. Having just bought a box of these rolls, I can confirm the delivery is fast.

F N Reece was good enough to send in a photocopy of the 8056 manual, for **R Thompson.** He advises going to **Wilding Office Equipment** to buy paper; he uses 210 m-wide rolls and says they work fine in his 8056. A further operational point he makes is that he had trouble with characters being missed out, and incorrect characters being printed, until he routed the printer cable away from the other cables in the QL system. It is also possible that his action in moving the cable actually fixed a bad connection, as faulty connections are perhaps the most likely cause of erratic printouts.

One more suggestion – look out for fax rolls at the All Formats Computer fairs. You may have to rewind paper if you can't get the right diameter or core size. Be careful to check prices, though; there are good deals (especially disk prices) but I've found quite a few items at these fairs costing appreciably more than they would from known mail-order companies. This comment doesn't apply to items sold by QL suppliers, fortunately.

Gerard Phelan has been trying to wear his printer out again, sending me another monster letter – 21 pages this time. One of his aims is to make clear to me the advantages of having a QL connected on-line to bulletin boards, and much of his letter consists of bulletin board messages, pertaining to QL problems. So far, having a QL on-line has been a bit like having a tv set for me – a subject easily ignored. The reasons are the same for both, and centre around the degree of involvement they seem to require of the participants. Quite simply, I don't have the spare time (or money). However, the set of Tandata units continues to sit within eye range, as it has done for a year or so, and a copy of T F Services *Qualsoft Terminal* program has recently surfaced nearby, so it looks as though the time has come. What's the betting having Qconnect linked to the 'phone will upset the fax machine?

Howard Clase (who answers queries on Psion program problems in QL World) suggests that **Andrew Pratt** might consider getting Howard's **QL_Fount** set of routines from the Quanta library, to help him create a Korean character fount. The routines would allow him to have Korean and English characters simultaneously, 'patched-into' Quill. The 5 x 9 (screen) and 9 x 9 (printer) grids used for creating founts might prove a limitation, if Korean characters are complicated.

INFORMATION

WinBack:
Dilwyn Jones Computing, 41 Bro Emrys, Tal-y-Bont, Bangor, Gwynedd LL57 3YT. Tel: (0248) 354023.

Gold Card and extra-high density floppy drives:

Miracle Systems Ltd., 25 Broughton Way, Osbaldwick, York YO1 3BG. Tel: (0904) 423986.
Serial 8056, paper rolls:
Sensitised Coatings Ltd., Bergen Way, North Lynn Industrial Estate, King's Lynn, Norfolk PE30 2JL. Tel: (0553) 764836. Fax: (0553) 760377.
text 87:
Software[87], 33 Savernake Road, London NW3 2JU. Tel: (071) 267 2025.

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Until the autumn of 1989 the fastest way of speeding up your QL display was to buy **Lightning**, which greatly accelerated QL text printing, graphics and maths, without affecting compatibility at all. NOW you can buy **Lightning** Special Edition, which is significantly faster than **Lightning** and does a lot more! **Lightning** Special Edition is simplicity itself to use. Once it is loaded ALL programs will AUTOMATICALLY benefit from the enhancements it provides. If you are using a QL without **Lightning** you are probably a little pale (quote from John Norton of Sector Software), you should get out and about more... Go to some QL shows or meetings where you will see **Lightning** in action - or take our word for it. If you don't have **Lightning** you are WRONG.
Lightning Special Edition works by automatically (I know we keep using the word, but it is the only one that is really correct here) and instantly replacing QL ROM code (or Minerva code, for that matter - Minerva and **Lightning** complement each other superbly) that has usually been optimised for space, with extremely high speed routines written by us that do the same job but much faster. Screen output speed gets accelerated by factors from over 1.5x to over 10x (about 2x-4x is representative), graphics are drawn twice as fast (points are plotted 5 times faster) and internal maths is speeded up by 2x-5x (you can even vary the precision). There is virtually no cost in RAM (for example, you can still run Quill with a fairly large document on an unexpanded QL with **Lightning** Special Edition).
The Special Edition is supplied on EPROM plus disk/cartridge: if you already have something precious plugged into the QL's EPROM socket (at the rear), there is no problem - all the EPROM's functionality is duplicated on the other medium!
Lightning Special Edition provides more than acceleration - you can dynamically adjust channel parameters - like ink, paper, font, screen position, use over 80 fonts, a null device, a character drain and all sorts of other interesting gadgets.
Lightning Special Edition installation has been totally automated, and will not present you with complications no matter how computer-naive you are.
If you cannot afford the Special Edition, get **Lightning**. Refer to its review in September 1988 QL World to see how effectively **Lightning** acquitted itself.
Both of these programs transform the QL into an altogether more zippy, business-like, efficient, enjoyable machine.

PC CONQUEROR WITH DR-DOS v5.0
PC CONQUEROR

Terrific though we know the QL to be, we do feel the pressure to be "PC compatible" in today's world. There is increasing demand to be able to bring home and run the programs we use at work (or the other way around!), and to have access to the vast storehouse of PC software: word processors, databases, spreadsheets, expert systems, accounts and financial modelling packages, vertical market applications, visualisation aids, graphics/CAD/PCB designers, languages/compilers, operating systems, environments, utilities, adventures - you name it, there are scores of each type readily available for the PC. And thousands of shareware/PD programs too, most for the cost of a blank disk plus postage.
If you buy PC **Conqueror**, you will be able to run these programs! To boot up PC **Conqueror** takes 10 seconds from the F1/F2 prompt: thereafter, your QL is a HIGHLY compatible PC clone (indeed, more compatible than some "real" PCs). **Conqueror** is all-software.
There is no comparison in quality between **Conqueror** and its predecessor: **Conqueror** has ALL the features of Solution (read the details later in this ad if you are unfamiliar with Solution's legion facilities), but is almost TWICE as fast: this has come about by our careful rewriting and optimising of Solution's code. As if the colossal speedup was not "enough", **Conqueror** (unlike Solution) runs perfectly even with PC software that makes various "non-legal" calls to the PC operating system. **Conqueror** runs with virtually anything that will run on a PC: QL Worlds from December 1989 to March 1990 listed several hundred PC programs/utilities found to work with **Conqueror**. It is simpler to say that we have yet to find a program that runs fine on a standard PC that doesn't run with **Conqueror**: we are aware, however, of programs that will run with **Conqueror** but won't run on some PCs!
Because in **Conqueror** we've cracked the problem of detecting when the PC screen has been changed, we need not slavishly update the screen many times a second (taking precious time away from the main PC-emulation job) as did Solution. Instead, we update the screen instantly it needs to be updated. This simple to understand but very hard to implement modification gives **Conqueror** additional (over and above what we've already discussed) "tunable" acceleration, as well as absolutely smooth echoing of keyboard input to screen (Solution could be a bit jerky when you typed quickly).
Conqueror's new features include a more flexible configurator and a better diagnostic and supervisor option, an enlarged manual (**Conqueror** itself is more compact!) with a troubleshooting chart, and a new mode of operation (in addition to the "normal" one of reading/writing PC disks directly) which allows you to create mini PC environments - you select the size, location and name - on any QL device (including floppy, ramdisk, hard disk and even mdv) which look like files from QDOS (and can therefore be copied with SuperBASIC's COPY!) but are indistinguishable from PC drives from within DOS (**Conqueror** works with all versions of DOS).
If you do not have legal access to a copy of DOS, you need to buy DOS too (DR-DOS or MS-DOS)- but we sell the complete DR-DOS (with Viewmax, Shell, Cache and all system utilities) at c 1/2 price!
Of course QLs are better than PCs - but QLs that are PCs as well are better still. We will leave the last word to people who have already bought **Conqueror**. All these sentiments are unsolicited.
"I wish to congratulate you on the excellent work you have done on Conqueror. The improvements in performance over Solution are astounding. Well done!" B.C.Papegaiij, Netherlands. "I am highly delighted with this new emulator. (Apart from the speed-up) it also appears to be more tolerant." L.Chandler, Peterborough. "Congratulations on bringing such a fast PC emulator into the world - on it, even Wordperfect runs at a reasonable speed." R.Williams, London. "I'm impressed with the improvement in speed over Solution." P.Vervoort, Netherlands. "Thank you for your prompt service. I have Conqueror up and running, and congratulate you on an excellent piece of software." G.Leagas, Hartlepool. "On some benchmarks almost as fast as a PC." P.Johnson, Stoke on Trent. "Conqueror is still a whole lot faster (even) without Lightning than Solution is with the assistance of Lightning." P.Christie, Glasgow, who went on to praise Conqueror for running software Solution couldn't handle. "Conqueror, to which I upgraded from Solution, is a delight to use by comparison!" B.Gouldwell, Dunipace..... V.Pakanen, Finland sums it all up rather well with - simply - "Excellent."

PROFESSIONAL PUBLISHER

To show you a little of what our **Professional Publisher** can do, we have prepared our last advertisement using it. Notice from our May 1990 advertisement how we can wrap the result around graphics or in fact anything, of any shape. When we wrote **Professional Publisher** (PP), we knew it was a very special sort of program. PP can produce pages of quality - virtually indistinguishable from those prepared on professional typesetting kit, the only limiting factor might be your printer: however, while the very best output output from PP will be obtained from 24 pin models and lasers, you will be stunned by what PP can squeeze out of the humblest 9-pin machine. Great care was taken in the design of PP so we were absolutely sure that no actual knowledge of, or practice with, desktop publishers was required in order to use it (the '**Professional**' in '**Professional Publisher**' refers to the output quality, not the level of operating skill required. When you use PP, you will notice that at each and every stage a menu is available (there are getting on for a hundred menus in total) with a list of options selected by using either the cursor keys and SPACE bar, or by pressing a digit key - use what suits you!
There is context sensitive, on-screen help too. When you get more experienced with the program, you may select Command mode (using the Enter key) and choose operations directly, bypassing the menu system. PP is more user-friendly than any page-making program we have ever seen on any computer, period.
Let us talk you through how you might choose to produce a page or succession of pages. This is just one way you might proceed: PP does not impose any sequence of steps upon you, and you can omit certain operations altogether. You will have pre-configured PP to boot up with a generous lot of fonts (you select which ones you are likely to want - of course you can load in additional ones, or discard existing ones, at run-time too). You could then set the required page dimensions and orientation, as well as not-necessarily-symmetric margin, grid, gutter, column and navigation-guide positions (yes, half the PP manual is a glossary) - you could have pre-configured PP for these too, or loaded in alternative layouts (layouts are distinct from page contents) you've created in previous sessions. If you don't set layout we'll use the default, or the one used for the previous page. Now you would plan the page in detail. Laying out graphics (if any) comes next - you can create these in PP itself, with its superb rubber-banding, dozens of brushes, palettes, texture-fills and so on. Alternatively, you can load in screens created elsewhere, including Eye-Q, Easel, any other graphics programs or digitiser, into a cut and paste buffer where a dozen tricks (including resizing, slanting, scrolling and texturing) are available, and then take the finished product onto the page. This done, you might insert headlines or captions, selecting from the dozens of fonts available. Each font can be manipulated in billions of ways (yes, we mean thousands of millions): to give but two examples, you have a choice of 32 slopes for italics for the font, and dozens of aspect ratios are selectable. Now you might opt to get the main body or bodies of text down on the page. As fonts are defined to great accuracy (upto 2304 pixels PER CHARACTER!) jaggedness is a thing of the past, and visually the choice of fonts can only be described as stunning! You can do this either by directly typing it into cursor-dragged boxes (with all the options you would expect from a dtp system, and a few more besides), or by loading it in from file created by Quill, PERFECTION, Editor or other word-processor. The latter method is better (because you retain the text as a character stream rather than as pixels when you save the file). Highlights such as bold, underline etc which you may have inserted into the text are preserved. Indeed, you can control PP's operation from within the text file itself. If you are an advanced user, you can even teach PP your own mnemonics, so that it switches between different styles and modes as it encounters instructions you put into your text file when you created it! The imported text file is editable within PP. It is up to you to decide where the text is to lie - PP places no restrictions on either the number or the shape of the windows into which the text is to flow: they need not be rectangular, and can have any irregular border, and can even overlap or be contained one inside another! You can freehand-draw (there's excellent rubber-banding to help you) the window borders as you choose, to get any effect you desire, to fill any space you wish and to avoid any existing material already on the page (or to reserve room for new material). Amazingly, within the window the text will all be perfectly micro-justified in the font(s) of your choice, however bent or contorted you made the border. Text will flow automatically from one window to the next either until you have run out of text or out of windows. There are many text formatting facilities: you can select word-wrapped, force-broken or hyphenated, and you can specify minimum numbers of "pre-hyphen" and "post-hyphen" characters so that absurd hyphenations are avoided (if no sensible hyphenation position can be found the word is wrapped instead). There are so many fine-tuning controls here that the rest of this ad could be devoted to describing them and would still leave things out! We will have to content ourselves with but one example: with micro-justification (pixel by pixel spacing, not crude character by character stuff) we even allow you to specify what % of padding space is to be allocated between characters and how much between words! Text work completed, you can then put in the final touches by adding borders, shadows, patterns or designs, overwriting or slipping under or combining these with existing material, repositioning parts of the page if necessary. The end result - be it for a letter, letterhead, document, manual, article, newsletter, magazine, book, thesis, ad - is far better than you have any right to expect from a piece of software costing under £2,500, let alone under £100...

PROFESSIONAL PUBLISHER TOOLBOX

NEW!

For Professional Publisher users - this useful addition not only supplies several man years worth of beautiful high definition fonts - including familiar types like Roman and Universal - but also contains many smaller fonts, more clipart and programs to load Sector Software clipart, filter text before importing into Professional Publisher, save parts of Professional Publisher pages as screens (for importing into any graphic program - like Eye-Q - or manipulating via SuperBASIC) etc. Excellent value.

FONT ENLARGER

For Professional Publisher users - loads of large fonts are automatically created by this multitasking utility, as and when you need them (or in advance), by enlarging existing smaller smaller fonts from PP itself and from Lightning Special Edition and hordes of other sources: with this there is NO jaggedness at all. A font editor for small and large (hdf) fonts is included.

GRAFIX

Scaleable output for all our desktop publishers on 9- and 24- pin printers: a useful alternative to the built-in drivers.

EYE-Q

There is no way to describe **Eye-Q** except as the best graphics program for the QL. This master is now four years old, and we have never felt the need to change anything. Its use is characterised by absolute simplicity, speed and power - it has that indefinable precision "feel" that is just right. All the expected manipulations are provided. Whether your needs are technical drawing, labelling, design, illustration, freehand work, copying - or just having fun, **Eye-Q** will not disappoint. Of course it is menu driven with context-sensitive help. The system takes 5 minutes to learn. The variable zoom and fill facilities, anti-fingerslip measures, cursor acceleration and so on make **Eye-Q** a classic in its own time.

ULTRAPRINT

To get the best printer output from Eye-Q or any other graphics program from any other source, **Ultraprint** delivers. An amazing 22 styles to choose from: enhance contrast (for line output) or gradation (for pictures) and vary magnification... A printer without **Ultraprint** is no printer at all.

MEDIA MANAGER SPECIAL EDITION
MEDIA MANAGER

MMSE is a joy to use. Whether something has gone wrong with a disk or tape ("Not found", "Not a valid Quill file", "Bad or changed medium", "Read/write failed" etc) or whether you want better control over your programs and data, **MMSE** should be to hand. Virtually any calamity can be recovered from automatically: all permutations (accidental deletion or part-overwriting, part-formatting, errors yielding: bad map but OK directory, bad

directory but OK map, bad map and directory, OK map and directory but bad file sectors, unknown fault, power glitch corruption and so on) have been carefully thought through and catered for. If nothing is wrong, but you just want to explore and understand more about your system, you can potter to your heart's content, assisted by the clear and packed-with-facts manual. Dozens of different diagnostic printouts can be produced. The whole system is menu-driven, with context-sensitive, on-screen help for every option. The speedy Sector Editor is a positive delight: the collector file facilities, bulk recovery, auto-navigation, skipping through the medium in physical, file (if map), logical (if no map) or uncollected/logical (if destroyed map, and because of "chequered" history with lots of overwriting/deletions no one-step recovery available) sequences must all be experienced to be believed. MMSE is extremely simple to operate, and assumes no advance knowledge whatsoever.
Alternatively, if you wish to tidy up your disks or cartridges, MMSE allows you to change volume format names, sort directories into alphabetic, date or size order, analyse file contents and histories, change case of filenames, move data/programs to/from alien-format disks, introduce or break copy-protection systems (illegal use prohibited!), MMSE can and will deliver the goods. It is absolutely superb.
The standard Media Manager is much less powerful, and less easy to use. It is only for those on a tight budget.

TOOLKIT III WITH ROM
TOOLKIT III

Virtually everyone with a disk system has Tony Tebby's fine TK2 Supertoolkit on board (usually built into the disk interface). Toolkit III - which works whether or not you have TK2 - takes off where TK2 ended, adding about 70 new commands and enhancing many existing QL and TK2 commands. TK3 is for everyone with a QL. You can get this system on cartridge/disk, with or without a plug in ROM cartridge in addition. The documentation is complete and very comprehensive. Some of the added commands are:
ADIM * ADIMN * AND_L * ATYP * BASREF * BV_BASE * CHANNELS * CH_BASE * CINT * CLOSE% * DEVLINK * DIR_USE * DITS * DIV_L * EOR_L * EXTRAS * FACC * FLP_SEC * FLP_START * FLP_TRACK * FLP_USE * FRAC * ISFLT * ISINT * KEY$ * LARRAY * LOWER$ * MEMCOPY * MEMSWAP * MJOB * MJOB_W * MOD_L * NFS_USE * ODD * OM_INIT * ONPIPE * OR_L * PEEK_F * PEEK$ * PEND * PIPE * POKE * POKE_F * PRED * QDOS$ * QIN * QOUT * QTEST * QWAIT * RAM_USE * REPLACE * REPLACE$ * RESET * RJOB_A * ROUND * SARRAY * SEARCH * SETDIR * SETDIR_A * SETHOST * SETNET * SETRO * SETRW * SETSYS * SETUSER * SGN * SORT * SORT_I * SUCC * TK3_EXT * UPPER$ * USER * WN_BASE * WSETHOST * WSETNET * WSETRO * WSETRW * WSETSYS * WSETUSER
Whether or not you can program, Toolkit III is of great use!

QFLICK CARD INDEX SYSTEM

Few users actually require all the facilities of a complicated database like Archive. QFlick presents a very convenient alternative - a very fast, simple to use card-file database, with easy to learn, snappy search and navigate commands and clean file-handling. You can move Archive data to/from QFlick. You can run multiple copies of QFlick. And QFlick's data is organised so it is easy to program from SuperBASIC, even for tyros!

PERFECT POINTER TOOLS

This excellent program gives you an on-screen pointer (arrow) environment of incredible smoothness, and 6 utilities with it. To explore the world of QPtr, Things, Hotkeys, Window Manager....

QUICK MULTITASKING SYSTEM

A pull-down menu controlled multi-tasking front-end, ideal for running in the background and giving you notepads, file-handlers, quick backup, clock, diary, mini-database, calculator etc etc.

DISKTOOL WITH QUICKDISK

An exciting way to accelerate disk access by upto 30%, add password protection to disks and to optionally increase disk storage capacity by 36K to 1512 sectors! All this works while maintaining full compatibility and normal disk control...

DIGITAL C SPECIAL EDITION
DIGITAL C COMPILER

Superb C compilers these - fast in execution, they produce extremely speedy and concise code. No-nonsense documentation is included. The Special Edition has many more features, including pointers, long pointers, structures, >64K code sizes, direct access to traps and vectored utilities, and is twice as fast because of its more efficient C/QDOS libraries.

TURBO BASIC COMPILER + TOOLKIT

This state of the art system will automatically convert ordinary SuperBASIC programs - the sort you buy, write yourself or type-in from magazines - into machine code, the language of the 68008 CPU, the brain of the QL. Such pure machine code programs run "directly", without the need to be interpreted by any intermediary system. This direct execution makes them MUCH faster in execution than BASIC. Turbo also adds a host of useful high-speed commands (called "toolkit extensions" if you are fond of jargon). Here are some timings, all carried out on a JS Trumpcard QL, to give you a taste of just how much Turbo can improve things:

	Iterations	SuperBASIC	Turbo'd	Speedup
Empty FOR...END FOR Loop	30000	49 sec	1.3 sec	38x
Empty REPEAT Integer Loop	30000	151 sec	2.4 sec	63x
String concatenation	3000	448 sec	0.4 sec	110x
Search through memory	300000	1410 sec	1.5 sec	900x

Turbo's automatic conversion process, called compilation, is as simple as this: (1) Boot up with the Turbo disk (2) Load in or type in your BASIC program (3) Enter the word CHARGE, and watch the friendly front-end menu pop into view (4) Choose a filename for the machine code task that is to be generated and (5) Press the SPACE bar. Turbo does the rest! Compilation is a one-off process, and is very fast too - it takes little more time than LOADing the original program did! Once compilation is finished, you have a machine code version of the original program. Start this with EXEC, just as you used to invoke the original program with LRUN: besides the tremendous difference in running speed, you will notice that the program loading time is cut down to a few seconds at most (big SuperBASIC programs can take half an hour or more to load). The EXEC mechanism also allows you to multitask programs, something impossible with SuperBASIC, as well as manipulate their time-priorities, link them together, exchange data and even share parts of their code while executing.
If you are an advanced user, Turbo's numerous fine-tuning facilities, 200-command toolkit (a terrific complement to the famous Supertoolkit) and 300+ page manual will be irresistable. If you are a beginner, you will wonder how you ever did without Turbo's program diagnoses and auto-correction.
Turbo is more than a very clever optimising compiler. Turbo is magic. If you do not have it, you can have no conception of the experience you are missing and the power you are forfeiting.

SOLUTION WITH DR-DOS v5.0
SOLUTION

This program transforms your QL into a pretty compatible - albeit not fast - PC clone. Solution will run over 95% of the "big name" PC software you have read about, missing out only on programs that make illegal use of the PC's operating system. Solution works solely from software so you don't have to worry about ripping your QL to pieces to fit anything, or have anything hanging out of the back. Just boot up the Solution disk and you will be using a PC, which will then ask for a copy of DOS (any) (just as it would if you were using a "real" PC). End of story - you are now using a PC. There are very few restrictions: both mono and colour CGA graphics are supported. 479K is available for PC software on a 640K machine and 667K when using Trumpcard - more than you will get on a PC or XT! Speed can be increased by using Lightning Special Edition but in final analysis just can't compare with Conqueror's speed). Because your newly aquired PC is really a QL you can multitask two or three PC programs (try doing that on a "real" PC!). You can also run QL programs alongside PC programs (DON'T try that on a "real" PC!). Converting files (data in either direction) between QL and DOS is no problem and you can re-configure the QL keyboard if you wish.

PROFESSIONAL ASTROLOGER
PROFESSIONAL ASTRONOMER

Our use of the term "Professional" in the name of an application program does mean that the quality achieved will meet or surpass the highest professional standards for that application. The term does NOT mean that you have to have the knowledge of a professional in order to get the best out of the programs.
Astrologer teaches you astrology from scratch, and enables you to produce reams (if you are short of paper, you can choose exactly how much) of narrative printout giving a person's horoscope, personality delineation, year-to-year life overview, detailed day-to-day (in fact, minute-to-minute!) predictions, as well as two-person compatibility interpretations. Also provides all the technical readouts, charts and zodiacal wheels you would expect. It is extraordinarily fast (there is a great deal of very clever maths within it) and it performs the whole computation in under a second. The author of the manual is the author of this advert, so you can expect a lucid and humorous read! Whether or not you believe in astrology - indeed, especially if you do not - this program is one that you cannot afford not to have. Scores of detailed readouts for famous people are supplied, incidentally - very interesting reading they make too... Discover Mrs Thatcher's secret yearnings, explore yourself, play the Stock Exchange...
Astronomer is an extremely efficient solar system computer, with planetarium views, planet faces (with shadows/eclipses), five different co-ordinate systems, 1sec=1day cinerama, etc.
Astrologer + Astronomer is supplied at a very low combined price.

ACT SPECIAL EDITION

The Adventure Creation Tool is for every programmer or putative programmer. Whether or not you have any interest in adventures, you will find something useful here. Animated graphics, data compression, language design and parsing, maps, object-oriented control and much more, with an excellent educational manual too.

3-D PRECISION CAD SYSTEM

2-D and 3-D design and manipulation, at a speed sufficient to permit real-time animation! Whether or not your interest is serious, 3DP will change the way you look at the world around us. The variation of viewpoint, perspective and magnification is very smoothIn addition to dot-matrix output, plotters are catered for.

SUCCESS

Run CP/M programs on your QL! What more is there to say, other than that after the PC family, no more common system exists than CP/M, with thousand of cheap programs... And Success is fast!

THE EDITOR SPECIAL EDITION
THE EDITOR

If your needs are for a technical Editor, or for full access to the entire ASCII character set (to handle machine code or compressed data files), or if your budget cannot stretch to PERFECTION, then this is the program for you. Editor is command-line driven and programmable. The Special Edition version is certainly better than the standard version: that is because the standard one contains only as many features as we could get to fit into an unexpanded QL. Both are fast and flexible, and very powerful indeed in the hands of the intelligent. Not a word processor, Editor's a way of life.

SPECIAL DESKTOP PUBLISHER
DESKTOP PUBLISHER

Both these WYSIWYG ("What You See Is What You Get" dtp systems are excellent in their own rights - it is only when you compare them with the stunning Professional Publisher that you become aware of their shortcomings. You won't get fonts as large or smooth as with PP, or wrap-around graphics, or as sophisticated a printer driver or text/graphics file import facility. You will get a very workmanlike tool, capable of producing output that the computer press described as fantastic and superb.... The standard edition is the ideal if you do not have a disk drive: if you do have one, go for the Special version, which correspondingly has more features including textures, large windows, better drawing and improved command entry. All upgrades are possible, and there is only a £10 penalty for doing it in two stages. So if you simply cannot afford PP, one of this pair is certainly for you.

SUPERFORTH COMPILER WITH REVERSI

Why not learn FORTH, the most logical computer language of all? This superb FORTH-83 compiler produces stand-alone multi-tasking code of speed comparable to C. SUPERFORTH source is even portable to other machines! The manual teaches you the language.

IDIS SPECIAL EDITION
IDIS

Machine code (from other people's programs, toolkits and the ROM) is unintelligible until you put it through IDIS, the intelligent disassembler. IDIS Special Edition automates everything it possibly can, and requires no human intervention. It even sorts out subroutines, replaces addresses with names, untangles data from code and so on. Standard IDIS contains as much as we could pack into an unexpanded machine, and is nearly as automatic.
If you want to find out how computers work, buy one of these two!

CPORT BASIC TO C PROGRAM TRANSLATION SYSTEM v1.16
This program translates SuperBASIC programs directly into C source code, automatically! If you want to move programs into C for migration to other hardware, or want to get your programs running faster, or simply want to learn C the easy way (chuck BASIC in one end and examine the C that spews out the other), CPORT is the system for you. CPORT is extremely friendly, easy-to-use and tolerant of poorly-written BASIC. There is even a method of dealing with BASIC toolkits. The C it will generate is very readable, human-like and is often optimal. Of course, the better the quality of the BASIC you put in, the better the clarity of the C that will be generated. But don't misunderstand - even if your BASIC is a rats-nest of GOTOs and GOSUBs, CPORT won't mind. Usually, the generated C - which can even be switched between the ANSI and Lattice (KARish) industry standards - needs no tinkering with. The only conditions worth mentioning are that there must be no computed branching (e.g. GOTO 3*Y+X), no interpreter-only commands (LIST, EDIT, RENUM etc) and that if the program contains PROCs or FNs (as it probably should!), there mustn't be any GOSUBs *as well* - not restrictions at all. CPORT is an amazing program, making breakthroughs in AI. CPORT is available on its own or together with the acclaimed C68K compiler.

SUPERBASIC MONITOR
Yes - this program monitors and reports on the performance of SuperBASIC programs as they run (i.e. dynamically) under the interpreter. Even if you only occasionally tinker, this one you must have! Ideal with XREF (static analyser), BETTER BASIC, TURBO etc.

XREF v3.10
An incredibly competent program analyser - structure, the dynamic call hierarchy of procedures/functions, step-ladder report, glossary, warnings, variable usage and so on.

QMON v2.05
The ultimate version of Tony Tebby's superb machine-code Monitor. An absolute must for those who really want to know what's going on in the QL. £10 off if you return the old Digital Precision Monitor.

COMPARE v1.07
This little gem compares files (data or program) at great speed, and allows shuffles and alignment in auto- and semi-auto mode. You cannot do without it!

MEGA DICTIONARY
If you have at least 1.5Mb RAM (Goldcard, some Thors and STQLs) this is the ultimate PERFECTION PLUS accessory, enabling the best possible spellchecking. It contains well in excess of 300,000 words: about 50% larger than the largest of the dictionaries supplied with SPELLCHECKER! Specify if you have HD or ED disks, for then we can supply this massive dictionary as one file (else as 2). Another attraction of this masterpiece - it will complement accessories (wordgames/crosswords/anagrams/wordfinds etc) that we intend to soon release. This is an incredible product, far better than you imagine!

SPELLCHECKER
SPELLCHECKER works with and without PERFECTION. SPELLCHECKER can always spellcheck files - either PERFECTION format or plain ASCII (e.g. Editor, Quill or text87 export files, for example). If PERFECTION is present, SPELLCHECKER can also selectively (pages/blocks/all) spellcheck the current document, or spell as you type. Spellchecking speed is over 35,000 characters per second on Goldcard, and a cracking 3 pages per second on lesser QLs. SPELLCHECKER comes with three ready-made dictionaries: small, medium and large. If you have only a 256K expansion, you can only use 'small'; if you have only 640K, you can use 'medium' too; if you have Trumpcard 768K (or more) you can use any of them. You also get a utility for creating and maintaining (add/delete/edit/view) "user" (i.e. your own) dictionaries. Further, you can spellcheck using either one or two (typically a supplied one and a user one) dictionaries - you can even specify which is to be used first when checking! So if you bought PERFECTION without SPELLCHECKER and want to add it (PERFECTION PLUS = PERFECTION + SPELLCHECKER), or even if you don't have PERFECTION at all, this is the product for you!

QMATHS MATHEMATICAL SYSTEM
An incredible mathematical compendium for the QL. Pride of place goes to the symbolic problem solver.... It can solve problems, simplify expressions, factorise, expand etc etc - all symbolically! If you could sneak this one into a maths examination (school/GCSE/O/A/S/undergraduate) you would have a formidable ally. It knows about all the algebraic operators, powers, roots, brackets (any number), trigonometry, matrices, determinants, vectors, factorials, perms and combs, binomials, exponentials, logarithms, hyperbolics, inverse functions, infinite series and their approximations, complex and imaginary numbers, conversions, and even calculus - both differential and integral (even knows definite integration, integration by parts etc)! And when the program is working something out, you can opt to get it to display some or all of the steps either All this is accompanied by a superb interactive tutorial. So whether you have been terrified of maths or are a boffin, this is the program for you: no mathematical skills are assumed or needed. Whether all you want to do is compute 2+2 or d/dx((sin(x)+x.log(x))^(x^(g(x)))), QMATHS will do it. There is nothing like this available on any computer. In addition to this program, the package also contains an interpretive, fractal image-generating language with loads of beautiful fractal programs supplied for you to use, modify or adapt. No programming skill is assumed or needed. In addition, there is a multiple precision floating point maths package - allowing calculations with all the QL functions at precisions up to over 600 decimal digit accuracy (that is not a misprint) and very fast too. In addition, there is a 3D surface modelling program and lots of calculating routines to perform all sorts of algebraic and statistical computations in your own BASIC or Abacus systems. This is an incredible package.

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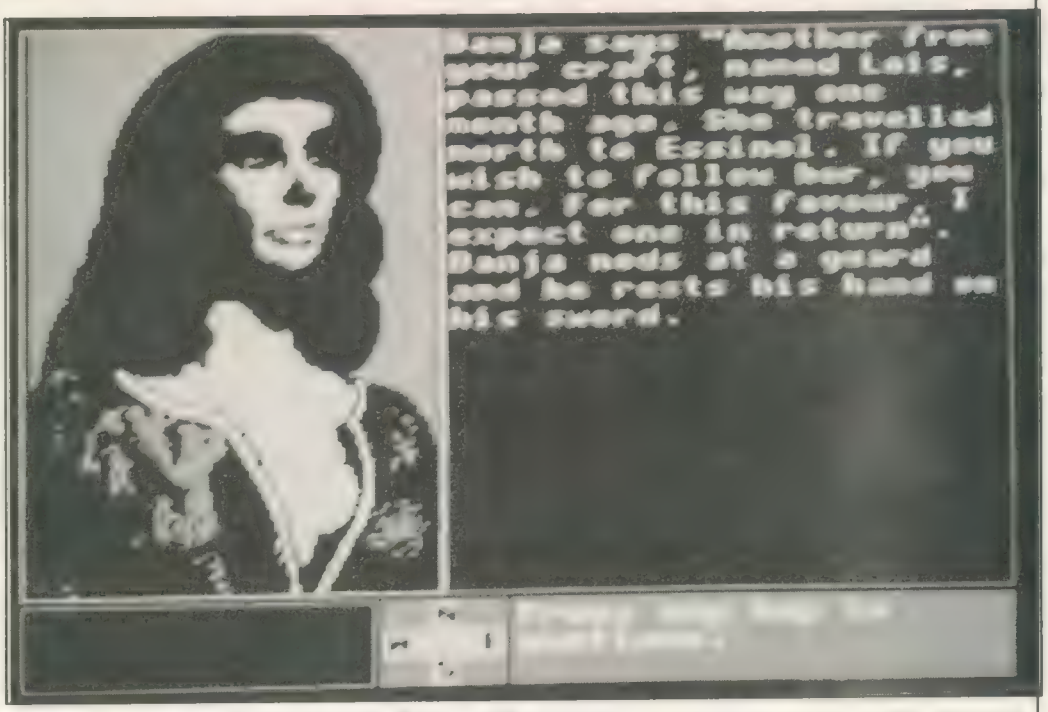
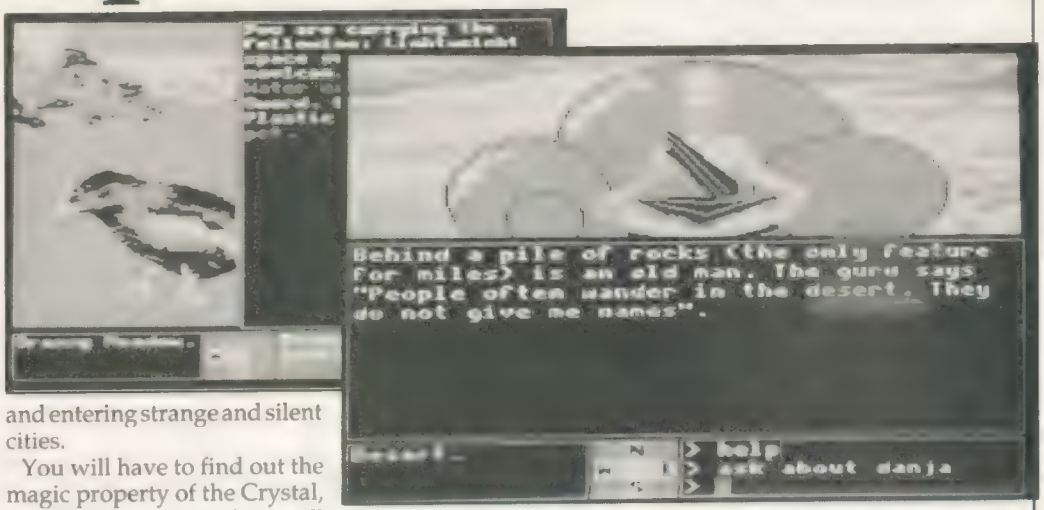
SOFTWARE FILE

INFORMATION	
Program:	*The QL Epic Adventure*
Publisher:	GCH Services Cwm Gwen Hall Pencader Dyfed
Price:	Disk only, £12.00. 512K+ QL only.



Epic Adventure



Too adventure buffs, and I count myself among them, the arrival of a new adventure for the QL causes a stir of anticipation. For us, a week spent without travelling in strange computer lands overcoming mind-stretching puzzles is an empty one, meaningless and drab.

How then would this new adventure by Andrew Pritchard fare? Would it match the high standards set by those QL adventure grandmasters, Alan Pemberton and Dave Watson?

I am very pleased to say that it is their equal, perhaps better.

The story starts with you waking up inside your spaceship, EPIC1, which is returning home after a mission of exploration. Looking around, you realise that you are alone; all your companions are missing. Have they been kidnapped? Did they beam down to the nearby planet's surface in search of something? What has been happening while you have been in suspended animation?

Needless to say, you will have to go to the planet yourself to search for them. As in all good adventures, the pathway is strewn with danger and confusion.

Many problems have to be solved. How can the old man in the desert help you? What is written on the note tied to the bird's leg? What favour is it that the beautiful Danja requires of you in return for revealing the whereabouts of your companion, Lois?

You will find yourselves trapped in a spider's web, exploring subterranean caverns, flying Flittercopters and entering strange and silent cities.

You will have to find out the magic property of the Crystal, barter for goods and use all your mental skills to reach Essinol, or your quest will be in vain.

I'll give you no hints or clues because that would spoil a cracking good adventure. Just draw your map, which should be large enough to cover over 70 locations, and be persistent. Remember, the lives of your friends depend upon you!

The whole program is of the text/graphics type written with a comprehensive 60 verb parser and illuminated with graphics conjured up by means of QL Real-Time Digitiser. The pictures which follow the script are therefore very lifelike and add greatly to the atmosphere of the story. Incidentally, full marks for some of the glamorous girls who appear throughout the epic!

My verdict is excellent.

QL Epic Adventure is absorbing, addictive and thoroughly playable. It represents a first class standard of writing. Any problems? Just the one, I can't leave it alone. Now, just how do I please Queen Danja?

Z 88

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QL SCENE

Euro 'SuperQL' ready to order

QLympic have written to inform *QL World* that the SuperQL planned by themselves and Cowo Electronic is now available on a six-week delivery time. The prototype was presented at the annual meeting of the German Sinclair QL User Club eV on 14 September in Frankfurt.

The SuperQL is not a new computer, but a combination of up to date QL and QL-compatible hardware in a tower housing. Anyone interested in ordering a SuperQL should contact either Cowo or QLympic. The price for the basic model is about £830 sterling (DM 2499).

The SuperQL is to be limited to an edition of 50 machines, each with a numbered certificate.

The outline specification includes a QL-compatible computer with an MC 6800 cpu, 16 MHz clock rate, 2 MB ram with zero wait-state, up to two 3.5 in floppy 720 KB / 1.44 MB disk drives, one optional 5.25 in 720 K drive, an optional 40 MB hard disk, optional twin microdrives, MF-2 compatible 102-keyboard, Qimi-compatible mouse system, Qtop user front end in English under the QJump extended Environment, comprehensive documentation and a 12-month warranty.

Interested parties should contact **QLympic Computer Systems at Quellenweg 18, 4220 Dinslaken, West Germany, or Cowo Electronic, Munsterstrasse 4, CH-6210, Switzerland.**

Bristol Workshop

The Great Bristol Workshop
is coming again,
This time by the Seaside, so
let's hope it won't rain!
Bring all your old software or
anything to sell,
Bring all your old friends and
your Granny as well!

We've got demos in Basic
and all QL arts,
We'll have systems for sale
and all sorts of parts,
Some Arcade games for
children, some good beer for
Dad,
Speakers and Technicians
and that can't be bad.

It's easy to get to, just down
by the coast,
The best in the country and
that's no idle boast,
There'll be plenty to see
there, we've invited the
Trade,
Just bring lots of money, and
your bucket and spade!

In November??!! My word, but they're a tough race. *QL World* must formally dissociate itself from any suggestion that it is proper to sell your Granny, even at a Workshop of the esteemed Quanta Bristol Group. However, we can reveal that the workshop will be held at the Walton Park Hotel, Clevedon – NOT at Bristol as formerly – on Sunday 17 November from 10a.m. to 5.30p.m. Access is from junction 20 of the M5, and the hotel is on the seafront, just north of the pier.

For advice about transport, phone **Chris Gregory on 0272 513653**, for accommodation at **the Walton Hotel** phone **0272 874 253**, and for advice about poetry. . . no number has been given, but for a small fee we can name the culprit.

For information about the QL Italy fair in December, please see Editor's Notebook on page 14.

Clever Cables

Cablefix is the name of a type of adhesive-backed lightweight cable trunking. Advertised as being suitable for home, office, vehicle, boat, caravan, laboratory and workshop use, the lengths of trunking are split along the back so that cable can be easily pressed in to the strips, which will adhere to most surfaces, including paint and woodwork. Cornering is done with right-angled coupling pieces. Cablefix can be cut to length with scissors, and comes in two sizes, 5.5mm wide by 5mm deep, and 8mm wide by 5mm deep in packs of four one-metre strips for £11.95 inclusive of VAT. Colours available are white or dark brown.

For more information contact Cablefix Ltd., PO Box 66, Uckfield, E Sussex TN22 3ANTel. 0825 812601..

OPEN CHANNEL

Open Channel is where you have the opportunity to voice your opinions in *Sinclair QL World*. Whether you want to ask for help with a technical problem, provide somebody with the answer, or just sound off about something which bothers you, write to: Open Channel, Sinclair QL World, 116/120 Goswell Road, London EC1V 7QD.

PC woe

I have the Psion programs on a PC under the *PCFour* banner, and I have transferred procedures and data from my QL 'Family Tree' over using Diskover. With the help of QL World I finally achieved this successfully.

While it works fine with new data, and will open the transferred data files successfully, I cannot get it to access the data and process it. I am no expert, but suspect the reason is that when the PC versions of the data files are created, linked index fields are also made. Because these do not exist for the transferred files, it gives up. I would dearly like a solution to this problem, to save me from laborious entering of all my old data from scratch.

Alan Toms
Formby
Liverpool

Editor's notebook

Thank you to everyone who has written with general or specific offers of help with readers' queries. There are no standing orders. When I see something that fits the bill. I shall throw it at someone . You will hear it slap on your doormat.

Don't forget, though, that there's nothing to stop anyone from responding at anytime to any query that appears for example in Open Channel, if you think you have a solution. The best ones will be run.

Qitaly Club and SPEM are organising the third Italian Users' Meeting on Sunday 1 December from 9.30am to 6.00pm at Via Ponchielli 26A, Turin, Italy. You can contact Dr. Bros Porenzi at Via Valerlana 44, 23010 Berbenno, Italy, Tel. 139 342 492323 evenings and weekends. Information on accommodation and maps if required, is available.

Easy save!

It's been a longish wait – since December – but at last Perfection is with us in all its glory and, in my opinion, well worth every minute waiting.

I received a pre-release copy at the last Leyland show, and even then it was full of promise. I received my release version early this month and it worked, giving all the advantages of Quill for ease of use without the (and I mean this as no slight to another excellent program) somewhat involved control of text87, plus the usual speed and additional features we've grown used to with DP products.

I did have the slight problems in one or two areas, initially. The Propub page inserter didn't work properly, the Configurator locked up at one point with Minerva and Qimi installed, but not with them absent, and I found that the auto-wrap refuses to allow leading spaces on a line, A letter to DP, and the first two were fixed. The third is a feature of Perfection which is a little disconcerting at first but, with a multitude of ways to circumvent it, becomes no problem at all.

In answer to Stanley Horowitz in the September edition, saving a document is even easier than in text87. Pressing CTRL/S presents you with a prompt giving the last file name Loaded or Saved (or a blank for the first occasion). The filename can then be cleared by pressing F5, edited as normal or accepted as it is, and the Save carried out by pressing ENTER.

The manual (only 104 pages!) closes with a quote: "If perfection could be attained, it would not be worth having." The program definitely disputes that quote.

Ken Davis
Silverdale
Lancs

Editor's comment: And so on to...

Unhandybook

You have been giving a lot of space to Perfection, but you do not mention the handbook which goes with it. The handbook illustrates to perfection how programmers can communicate to computers with ease, but when they try to explain things to humans, they get lost in a morass.

Churchill in an introduction to a Manual of Admin, issued to RAF Commanders during the War, warned people about submitting reports which at the end of pages of reasoning, end with: "I therefore recommend...". He implores people to start with their recommendations and follow with their detailed reasonings. Most of the recommendations will be accepted without having to waste time reading them. I feel the same thing goes with handbooks. Start with straightforward instructions on how to use the equipment, and follow it with detailed explanations.

When writing private letters, I like to centre my address. In the opening paragraph of the handbook, it says: "Perfection is simple enough to use without a manual", so I pressed J on Menu 2. No way could I get my address to centre. After about an hour searching through the 104-page handbook, I found

justification hidden in a page called 'Line settings' and there was nothing self-evident about its use. In fact, 'justification' was conspicuous by its absence from any index.

One of the best features of Perfection is its three menus. Why didn't they start the manual with simple straightforward explanations of how to use the Menu items, and then go on to all the other clever tricks it can do?

Captain Eric Starling
West Kilbride
Ayrshire

Editor's comment: I have made enquiries, and Digital Precision will be issuing the Index to the Manual Shortly. As to why we give Perfection a lot of space, and why the Index wasn't with us sooner, see David Drysdale's article on page 22! Manuals remain a universal source of woe to computer users. I agree with the findings of Messrs. Churchill and Starling on layout and indexing. However, we note that Capt. Starling did eventually find the section he was looking for. This is a quantum leap ahead of the kind of manual where vital information doesn't even exist.

Errata

Thank you for publishing my letter on *Professional Publisher* in the September issue. There are a couple of corrections that need to be made for the technique I outlined to work. 1. At the end of the second paragraph, 'DTP text' should read 'DTP_rext'. In line 90 of the program listing, if$+CHR$(10) should read lf$=CHR$(10) (in capitals, LF$=CHS$(10)).

Peter Hamill
Elton
Peterborough

Editor's comment: Thank you for the helpful letter. The errors are ours. As a general hint to Open Channel contributors, if you are sending listings, please keep the column width compact and the print quality dark wherever possible, so that we do not have to retype them. Another interesting statistic: while only 2% of the population hastens to respond to questionnaires, approximately 99.998% of our correspondents send helpful letters which are a pleasure to read, even when they contain complaints or corrections. When we print a letter from a reader asking for help, we are often inundated with suggestions; sometimes an answer pops up months after the request, from somebody who has remembered it. That's community spirit.

```
100 REMark Interest Calculation on Daily Basis
110 REMark Franz Herrmann        July 27, 1991
120 :
130 c$="£"                      : REMark currency unit
140 :                           : REMark e.g. "DM " for Germany
150 REMark - Input -
160 CLS: UNDER 1
170 PRINT "Interest Calculation on Daily Basis"
180 UNDER 0: PRINT
190 INP " Capital",c$,"",k0,1000    : REMark start capital
200 INP " Interest","","%",p,5      : REMark annual interest rate
210 INP " Years","","  years",y,2   : REMark years  \
220 INP " Months","","  months",m,7 : REMark months  ;  time
230 INP " Days","","  days",t,27    : REMark days   /
240 PRINT
250 :
260 REMark  - Calculation -
270 q = 1+p/100         : REMark interest factor
280 k = k0 * q^y        : REMark annual interest
290 t = 30*m + t        : REMark days of year
300 n = INT(k*t/100)    : REMark interest number
310 d = 360/p           : REMark interest divisor
320 k = k + n/d         : REMark daily interest
330 :
340 REMark  - Output -
350 PRINT " Interest ="!c$;TRUNC(k-k0,2)
360 PRINT " new Capital ="!c$;TRUNC(k,2)
370 :
380 :
390 REMark  - Subroutines -
400 :
410 DEFine PROCedure INP (Text$,Cur1$,Cur2$,Var,DefVal)
420  REMark simple input routine, press <RETURN> to take
430  REMark over default value or type in value
440  LOCal Var$
450  PRINT Text$!"(";Cur1$;DefVal;Cur2$;") = ";Cur1$;
460  INPUT Var$;
470  IF Var$="" THEN
480    Var=DefVal: PRINT Var;Cur2$
490    ELSE Var=Var$: PRINT Cur2$
500  END IF
510 END DEFine INP
520 :
530 DEFine FuNction TRUNC (x,d)
540  REMark does not round !
550  RETurn INT(10^d * x)/10^d
560 END DEFine TRUNC
```

Desktop

I want to say how much I enjoy the *Desktop* program, which after much checking and counter checking, runs as it should run. I still can't get the agenda working properly, but I get the feeling that the fact that items do not stick to the date given, but appear at random at other dates, must be due to the different way of either inserting items by date or by priority.

However, what really irritates me is the fact that, after loading, items 0 and 2 operate on command, but that when trying to start items 1 or 2 (notebook or agenda) the program hangs. If no keys have been used yet, ESC brings you back to *Archive*, but once you have touched either the space bar or Return, the system hangs forever.

The only way out I could find is, from the main menu, to choose 0 to exit, enter "let Guest$="notepad" and run Desktop again, after which, choosing no. 1 from the main menu brings on a flashing screen that is not quite correct, but in the first screen of this program either part of the magazine print got lost, or was not complete. I wonder whether others have the same problem and if so whether there was a solution.

Notwithstanding the above, I am impressed with this program and would love some more.

Albert van Rheenen
Amsterdam
Netherlands

Editor's comment: Robin Stevenson dealt with two or three specific enquiries about the Desktop suite, none of which were the same as this one. I will put him onto it.

Interest

In *QL World* August 1991, Mr Patterson asked for a program to calculate interest on a daily basis. As his problem sounded interesting to me, I found out about the methods commonly used by banks and wrote a small program which might be a first step to help. Mr Patterson, however, mentions something concerning credits and building societies which I did not understand fully; for the interest calculations, a year consists of 12 months of 30 days, ie 360 days.

Franz Herrmann
Ockenfels
Germany

The QL in North America

Despite primitive living conditions (NTSC), the Lost Tribes of QL are alive and kicking in the Uncharted Lands beyond the Big Water, reports Robin Stevenson.

The QL was first officially made available in North America in the spring of 1985, a year after its UK launch, or to put it another way, six months after it was available in Britain. In its journey across the Atlantic, it underwent a number of changes.

The US version was built by Samsung in Korea. To meet the tough electrical interference laws it acquired some metal shielding in the case, and some undocumented capacitors. The tv video signal was altered to the 60 Hz NTSC standard, and the JSU rom messed about with the graphics coordinate system to suit. Also, for no apparent reason except an outbreak of common sense, the BT-style serial and control ports were replaced with standard 9-pin D sockets. It went on sale at $500, substantially less than the £400 price in the UK at that time.

Undeserved notoriety

Other than that, the US QL would be instantly recognisable to a European user. Unfortunately, there was also the familiar proportion of unreliable machines, and the QL acquired the same undeserved notoriety, which it was not given time to dispel. By 1987, Sinclair had sold out to Amstrad and most North American stock ended up with A+ Computers. Interestingly, they also acquired the North American rights to Qdos, which were not included in the Amstrad deal. They were able to produce a development of the JSU rom known as MGUS. This Europeanised some of the US features, such as the quirky graphics, and Americanised some of the other bits, such as the error messages. For example, instead of the bland 'PROC/FN cleared', you will get 'I've forgotten what I was doing'!

On the periodicals side, *Sinclair User* magazine and *Time Designs* magazine both gave the QL good coverage, and for three years there was a dedicated magazine, *Quantum Levels* from Syncware Systems. Alas, all of these are now defunct, but *Update Magazine* (see below) and *Vulcan's Computer Monthly* continue to cover QL topics.

It is very unclear how many JSU QLs were produced. The most quoted figure seems to be 9000 actually imported, with a long standing rumour of another 1000 languishing in a Far-Eastern warehouse. As to the number of current users, that is anybody's guess. The answer seems to be: enough to support a good user-group network, but not enough to sustain a full-blown industry.

One interesting difference from the UK scene is the closeness of the QL to its Sinclair siblings. Sold under the Timex badge as the T/S 2068, the Sinclair Spectrum continues to sustain a good following there, despite being unsupported by Timex since before the QL came on the scene. User groups, publications and suppliers often combine a specialism in both computers, and many users moved up to the QL out of brand loyalty. The loyalty of both QL users and suppliers is fast becoming legendary. There may not be many newcomers to the scene of late, but as one supplier put it, 'Most defectors these days go by way of a pine box.'

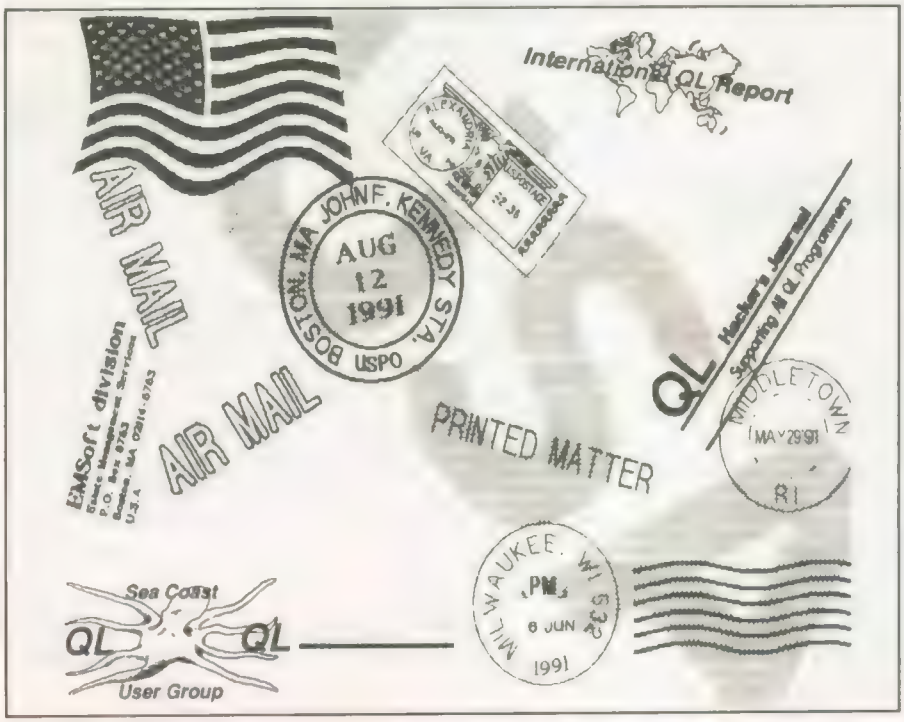
Multiple mothers

As elsewhere, the QL is used in a vast range of situations. From homes and hobbies to businesses, colleges and science labs someone somewhere is using a QL. One favourite and apparently true story is that Cray Computers (makers of huge supercomputers) carried out research into parallel processing by 'jury-rigging' a dozen QL motherboards together. Perhaps this is the super-QL we've been looking for!

High specifications

As might be expected in such a prosperous country, most QLs are pretty highly specified. Printers, colour monitors, disk drives, modems, extra memory and toolkits, all are common, although hard disks, mice and QL networks remain rarities. The Miracle GoldCard looks set to be a big US hit. Reports are that it is already selling well.

The Thor computer is, if anything, even more of a minority machine in the US than here in the UK. Peter Hale of EMSoft only knows of four users, with a total of ten machines between them. In particular he describes one Thor user with a huge medical database, for which he uses Archive and a hard disk. Because of the importance of the data, it is networked to a second hard-disked Thor, to keep a full working backup of the system.



So how does the land lie as far as the QL is concerned? One of the most active areas, perhaps appropriately, is New England, in the north-east corner of the country. It was from Newport, Rhode Island that the first QLs went on sale, sourced from the UK. Bob Dyl, who ran this concern, is still involved in the very active Sea Coast QL User Group. Having successfully got the QL Source Book off the ground (see below), this group has now launched an exciting new periodical, the *International QL Report*. Published four to six times a year, with an annual subscription of $10 North America, $20 rest of the world, this aims to give up-to-the-minute news, reviews, rumours, hints and tips on QL developments around the world.

Going East

In neighbouring Massachusetts, there is the new and thriving New England Sinclair QL User group (NESQLUG), with a rapidly expanding membership in the Boston Area. There is also the above-mentioned EMSoft, a software house run by Peter Hale, who has been very helpful and enthusiastic with information for this article. He specialises in Archive applications but is also building up an impressive product list from third-party suppliers both home (USA) grown and from Europe. The wonderfully named Wood and Wind Computing also lives in nearby New Hampshire, producing a range of SuperBasic and Archive utilities. Bill Cable runs it, along with a wodworkinh business, from a circular log house he built himself. It is heated by solar power and wood fires, and uses wind to generate the electricity to power his house and his QL – hence the name.

Also east-coast, but further south, is Sharp's of Mechanicsville, Virginia. This is the major QL stockist for North America. In 1989 they bought the QLs held by A+ Computers, and still hold stocks of new and reconditioned machines, supplying hardware and software from both sides of the Atlantic.

Over on the Potomac River, in Alexandria, Virginia, is Tim Swenson, one of the classic hacker enthusiasts. After a working day keeping 60 networked Unix workstations on friendly terms with each other, he spends his spare time programming his QL (along with his collection of 33 lesser micros). Not only does he edit the *Capitol Area Timex/Sinclair* newsletter, but also, as a sideline, publishes *The QL Hacker's Journal*. This is not a commercial concern, in fact he sends it out free 'as a service to the QL community' aiming it at those who love writing code. Past issues have focused on SuperBasic and C, but I'm sure he'd love to hear from anyone sharing his programming enthusiasm. He is also interested in adding to his micro collection, so if you are looking to dispose of an old Dragon, Oric, Sord, etc., he may well be interested. His address, plus Email code, is in the contacts box.

Looking further west, there is a hot-spot of QL activity around Lake Michigan. The hub of this activity seems to be Indiana, where Paul Holmgren and Frank Davis run ISTUG, a user group covering the whole Timex/Sinclair range. Putting theory into practice, they also run a business called Mechanical Affinity, own the rights to both Qdos and the Mgus rom modifications, provide a service modifying, repairing and upgrading US QLs, and supply eprom boards and battery backed clocks. As if that was not enough, Frank Davis is editor of Update Magazine. Founded in 1987, and with a strong QL component since 1988, Frank took over the magazine in July 1990 and it remains a vital information lifeline for many users across the continent.

Other active groups in this part of middle America include SMUG in Milwaukee, and the Chicago Area Users Group, both on the banks of the lake. A new umbrella group, the Timex/Sinclair North American User groups, T/SNUG, has also recently formed, drawing together members from the area and producing a newsletter titled, rather intriguingly, *ZXir QLive Alive*. Don Lambert, the editor, is 'a dyed-in-the-wool TS 2086 (Spectrum) fan', but there are plenty of QL enthusiasts to keep the record straight.

Away in the far north-west, as far from New England as it is from the UK, is Oregon, home of CCATS, The Clackamas County Applied Training Society. Rod Gowen, who coordinates it, also runs a Timex/Sinclair based business, RMG Enterprise, of 1419½ 7th Street, Oregon City. Why the half, I can't imagine. There is nothing half-hearted in his business. He is the last full-service Sinclair dealer in North America. Despite pessimism regarding its commercial prospects, he assures us, 'I will continue to support the QL as long as possible, both through my business and my user group.'

Canada calling

Canada has its QL users. EMSoft's mailing list only includes 16 of them, but there is enough interest to sustain the Toronto Sinclair User Club with a strong QL showing. There are plenty of other active individuals and groups spread across the continent. Rob Martin gallantly coordinates a five-man group in Gainsville, Florida. From Long Island, New York, to the woods of Idaho up in the rocky mountains, there is a continuing enthusiasm.

To help unite and coordinate such people, and also to link up the many users whose QL horizon stops at the study door, Sea Coast QL User Group have collated the QL Survivor's Source Book. This covers QL-specific hardware, software, publications and user groups not just for North America, but right around the world. They have made their information available to a number of representatives in Europe, to help make the QL community more of a global village. Richard Taylor, one of the instigators, is very enthusiastic about the prospect of drawing such interest together. He says, 'As information spreads more and more users keep coming out of the woodwork.' If your bit of wood seems isolated, I'm sure Richard, or any of the addresses in the contacts box, would be delighted to hear from you.

Contacts

This is by no means an exhaustive list, but provides a range of organisations, all of whom are known to be still around. Many of the user groups produce their own newsletters on a regular basis, and would welcome postal members.

All addresses are 'USA' unless Canada is specified.

Suppliers:

EMSoft, PO Box 8763, Boston, MA 02114 (Peter Hale is also a contact for NESQLUG). Tel: 617-889-0830.

Mechanical Affinity, 513 East Main Street, Peru IN 46970. Tel: 503-655-7484.

RMG Enterprise, 1419½ 7th Street, Oregon City, OR 97045 (Rod Gowen is also a contact for CCATS group).

Sharp's, PO Box 326, Mechanicsville, VA 23111. Tel: 804-730-9697.

Wood and Wind Computing, RR3 Box 92, Cornish, NH 03745. Tel: 603-675-2218.

Information sources:

International QL Report, 15 Kilburn Court, Newport, RI 02840.

QHJ, the *QL Hacker's Journal,* Tim Swenson, 4773 W Braddock Road #3, Alexandria, VA 22311 (tswenson @ dgis. dtic. dla. mil) (also a contact for CCATS group).

QL Survivor's Source Book, North American supplier is Update Magazine.

Update magazine, PO Box 1095, Peru, IN 46970 (Frank Davis is also a contact for ISTUG). Tel: 603-675-2218.

Vulcan's Computer Monthly, PO Box 55886 Birmingham, AL.

ZXir QLive Alive, ed. Don Lambert, T/SNUG, 1301 Kiblinger Place, Auburn, IN 46706.

Other User Groups:

Capitol District Timex/Sinclair Group, Fred Lewis, 5 Sherwood Park Dr, Burnt Hills, NY 12027.

Chicago Area Users Group, Bob Swoger, 613 Parkside Circle, Streamwood, IL 60107.

Gainsville Sinclair Group, Rob Martin, 508 NW 35 Terrace, Gainsville, FL 32607.

Sea Coast QL User Group, Richard Taylor, 309 Holly Circle, Tiverton, RI 02878.

SMUG, Bill Heberlein, 5052 N91st Street, Milwaukee, WI 53225.

Toronto Sinclair User Club, Hugh H Howie, 586 Oneida Dr, Burlington, Ontario, L7T 3V3 Canada.

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JOIN QUANTA !

QUANTA is the independent QL user's club. If you have not already joined then consider the following:

- QUANTA stands for "QL Users and Tinkerers Association" and provides a forum for users to get together.
- Members requiring guidance on software and hardware can seek out expertise from fellow members.
- Local sub-group meetings are regularly held throughout much of Britain.
- There are also workshops where we and others demonstrate our wares. Members have access to a large software library and can often find spare parts and second hand bargains at QUANTA meetings and can see new products.

The £14 (£17 overseas) subscription includes an informative monthly magazine. Most of all, though, it is good fun so contact the Membership Secretary, Bill Newell, 213 Manor Road, Benfleet, Essex, SS7 4JD, or telephone (0268) 754407 now!

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The **3.2M byte DUAL DISK DRIVE** together with the GOLD CARD brings the QL system right up to date. The drive contains 2 mechanisms each able to store 3.2Mb on an ED diskette. ED actually stands for 'Extra High Density' and refers to the rate at which data bits are read from and written to the disk. ED disks transfer data at 1 Megabit per second whereas HD (High Density) transfers at 500K bit/s and the old QL standard DD (Double Density) at 250K bit/s. Please note that these are instantaneous rates and that to work out file transfer times other factors must be considered.

The drive is fully backward compatible in that it can read and write both DD and HD diskettes with any type in either drive. The DD, HD and ED diskettes are all the same physical size known as the 3.5" form factor. The HD and ED diskettes have an extra hole in their casing, in different places, so that the drive can detect which type of diskette has been inserted. This means that there is no need for the user to tell the QL of the diskette type in use. For example, if you format a DD it will format to 720K, whereas an ED would format to 3.2M.

The drive is fully cased with cable and integral 220/240V power supply and comes with 10 ED diskettes.

We are exhibiting in:

LONDON	*23rd November* (Consult QUANTA for details)
GLASGOW	*1st December* All Formats Computer Fair City Hall, Candleriggs
ITALY	*1st December* Via Ponchielli 26 C, TORINO
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NOTICE BOARD

PCB SOFTWARE

Could we have a volunteer reviewer, please, for *PCBCAD* by Lear Data Systems? This is not a very new program, having been sold privately for some time, but has not been reviewed before in *QL World*. Users need specialist knowledge of basic electronics and printed circuit board layout, for which the program is specially designed, although it may be used for some engineering drawings as well.

The minimum hardware required is a QL or Thor with at least one disk drive, a minimum 512K memory expansion, a monitor, an Epson compatible dot matrix printer, and either a flatbed plotter sized A3 or larger (HP-GL) or a Postscript laser printer.

We would like either a report from an established user (V2.01 or higher) or a review from a new user to whom we can loan a review copy. Reviewers must be able to supply copy as double-line-spaced printed hardcopy plus any relevant screen dumps, as usual. Payment at our current page rate.

If you are interested, please write to the editor.

TERMINAL UTILITIES

We also need a reviewer for another specialised program, *Terminal Utilities* from AFW Software. This package is a pair of utilities for *QL Terminal* from TF Services. The minimum system needed is a JS QL with 128 K ram, two microdrives, the Psion suite, Tandata QCon modem with QL Terminal software (V2. O or higher). An expanded-memory QL with disk drives, and software such as *The Editor SE*, *ProPublisher*, *Perfection* and *Qpac2* would make better use of the software.

Volunteers for a review or user report as above, in writing to the Ed., please.

C COMILER

We ALSO want a user report - from somebody who has been using the program for a while - on the *C68 Public Domain C Compiler* supplied by Qubbesoft and Digital Precision (bundled with *CPort* in the latter case), Issue 6 with full 32-bit floating point implementation.

We would also like a user report on Qubbesoft's *MicroEMacs Text Editor 3.9*. That will need screen shots or alternatively screen dumps to accompany it.

We do not have the software to loan on these two programs. Write to the Ed. as usual, please.

SUBSCRIPTIONS

Last month we helpfully suggested that if you have a question about your subscription, or a change of address, you should write directly to our subscription agents, quoting your subscriber number.

Back came the response: what is a subscriber number?

I put this question to our subscription agent, who said: 'It's not very simple. Er, yes, what is it exactly? It's er...' I quickly rephrased that to assure him we did not need to know exactly what it did, more how we should find it.

In a nutshell: with your *QL World* comes a white sheet of paper the same size as the magazine. On the sheet of paper is a number comprising a certain number of digits, followed by a slash, followed by a six-digit number.

The six-digit number is your subscription number.

For example, if the number on your sheet is XXXX/987654, then your subscriber number is 987654 (QL World).

Its exact means of operation is no doubt too dark a tale to tell, but what it actually does is allow their computer ops to collate your information instantly with your file on the database, thereby saving much confusion and delay.

Nearly all clubs and magazine subscriptions have a subscriber number of some sort; they are usually to be found somewhere on the address label, envelope or (like us) plain paper insert. Sometimes they work miracles.

THE EDITOR.

SOFTWARE FILE

ADDRESS LABEL PRINTER

INFORMATION
Program: *Address Label Printer*
Publisher: Dilwyn Jones Computing
41 Bro Emrys
Tal-y-Bont
Bangor
Gwynedd
Price: £15.00. Microdrive or 3.5in, 5.25in floppy. 256K memory expansion required with ramdisk.

The author, J H Ree, and I, quite by chance, bumped into each other at the excellent workshop put on by the Southampton group.

"What made you write this Address Label program?" I asked

"Because I couldn't find a good one on the market," he said with conviction.

It was also by chance that I had also encountered the same problem. I am the Secretary of a club which has 250 members, and about a year ago I needed a good program to run the membership system and print bulk address labels.

Initially I used the Quanta library program which ran under *Archive*, but it proved too erratic in label printing. No amount of tweaking could change its seemingly random line spacing.

My solution was to buy a copy of *Archivist* which suited me to the ground. I was able to merge my existing *Archive* database file using a utility which came with the program. It proved perfect for my printing requirements.

J H Ree went one better. He wrote a bespoke program of great versatility which proved so good that Dilwyn Jones persuaded him to launch it commercially.

In essence, this is an *Archive*-driven utility which has a number of hidden benefits over similar ones. For a start, it starts off by copying all the available database into ram. This not only reduces the risk of losing it by means of a crash, but also speeds the retrieval up – quite a bonus with *Archive* utilities! The label width is configurable from 3.5in to 6in. Similarly the label height can be varied from 1.5in to 4in. Also a full list of fields is available for use with a Mailmerge program.

Coming from the Dilwyn Jones stable, as expected, the system has good configuration instructions for non-Epsom printers. It also boasts a automatic ordering of entries, automatic suppression of blank lines in an address on a label, and is suitable for both 9- and 24-pin printers.

How does it work?

Firstly you load *Archive* in the usual way, then you type RUN "boot". The screen asks you whether you wish to run from flp1_ or flp2_. You decide by pressing the space bar. Almost immediately the bespoke screen is displayed, showing the first record in the database.

Commands are actioned by use of the first letter. This, of course, allows you to alter any of the displayed fields. It has the additional benefit that if a name is over 36 characters long, it will do a test to see whether it will fit on two lines of the label.

In the delete function, a novel idea is that a large X appears across the whole display to make sure you realise what you are about to do.

Full marks also for a very useful and comprehensive manual. I was particularly impressed by the sections on printer configuration and the extensive guidelines on Error Reports. Help on data transfer recovery following computer crashes is also extensive.

Address Label Printer is a simple-to-use, versatile and professionally-written utility. I commend it to anyone who has large amounts of address labels to print. My only criticism is that he wrote it a year too late!

SLOWGOLD

INFORMATION
Program: *Slowgold*
Publisher: GCH Services
Cwm Gwen Hall
Pencader
Dyfed
Price: Disk £5.00 mdv £7.00

Having been totally pleased with my Miracle Systems *Gold Card*, I find just one small drawback to this excellent piece of hardware: it can be *too fast* for some software, particularly arcade games.

This is where a new program, *Slowgold*, very cleverly written by Norman Dunbar, forms a perfect complement.

In essence, it is a procedure which allows you to slow down the speed of your QL so that some programs become easier to use. It was written on the suggestion of Dilwyn Jones.

The other benefits are that it will slow down non-Gold Card systems as well . . . Do you want to get a high score on *Diamonds*?

You have 15 choices of speeds and all are controlled by a few lines in your boot program. You call up the routine by:

```
10 LRESP FLP1_SLOW-
GOLD BIN
```

If you don't have *Toolkit2* then a small Superbasic program is provided for loading. Then you type:

20 GO SLOW

followed by:

30 SLOW 15 (or any number between 1 and 15)

and that's it . . . the line numbers are of course examples.

If at some point during the particular program you wish to take the restrictions off then its just a case of:

40 NO SLOW

and back to normal. Should you require it, you can put:

50 HOW SLOW

or more properly . . .

50 PRINT' The delay factor is' & HOW SLOW'

For the more technical of you, the routines work by putting a small delay in the 50/60Hz interrupts. They will not work on games and other programs that knock out these interrupts, such as early QL games. The code is not re-entrant or rommable as it contains data area within the code.

Slowgold is a very simple and foolproof system which is worth every bit of its £5.00 asking price. Buying a Gold Card? Then Slowgold is a necessary and most beneficial accessory.

The Price of Perfection

Freddy Vachha's word processor *Perfection* took over £250,000 worth of programming time to complete. David Drysdale asks him whether he thinks it was worth it.

'Have you ever seen anything as sexy as that?' asked Freddy Vachha excitedly as he flashed his ruby-bright *Perfection* cursor to and fro across a QL monitor screen at Digital Precision's London headquarters.

It left me unimpressed, so he patiently explained that a whole month's expensive programming time had gone into making that flicker-free Perfection cursor move with such smoothness and precision.

I use Perfection myself and find it to be a cracker of a program. Its designers, however, seemed to have a fanatical degree of dedication to technical minutae and this was why I had come to interview Freddy. I was not there to review the program, but to look at the concepts behind Perfection, to ask about his nit-picking obsession with detail and to question the program's commercial viability — particularly in the now rather restricted QL marketplace.

I put the Rolls-Royce legend to Freddy. At one stage of its development it is said that Rolls-Royce invested so much time and effort in striving for products of unsurpassed quality that other business and financial considerations became secondary and they found themselves getting into financial trouble. Could this, I wondered, ever happen at Digital Precision?

'You are quite right', Freddy replied with a chuckle, 'to compare us with Rolls-Royce. A lot of the product philosophy is similar. Like them, we don't believe in cutting corners and this is often unknown to the public even though they benefit from it.

'One example of this is in *Eye-Q*, our graphics program. When we designed Eye-Q we made it fit the frequency of direction change in the cursor movement. This means that the cursor accelerates as you keep the key pressed. However the program also senses how often you overshoot your mark and have to come back, and it adjusts its speed accordingly. This gives the user the sense of being a good artist, completely unaware of the help being given by the program.

'As far as the "rather restricted" QL market is concerned, I would remind you that there were about a quarter of a million QL computers in circulation and initially Digital Precision's choice of the QL was a logical one — from a financial view also. The QL was an excellent computer and Sinclair had it as his top-of-the-range machine. Its predecessor, the Spectrum, had already sold more than any other micro in the world — in fact twice as many as its nearest competitor.

'However, things went wrong. Sinclair came out with an electric tricycle, and eventualy sold out to Amstrad.

'At this point lots of people considered the QL to be dead but I thought otherwise. Apart from the non-trivial number of machines in circulation another factor had a great bearing on my decision to carry on supporting the QL. Throughout this period, alongside my Digital Precision activities, I had been acting as a computer consultant producing software for other computers. This gave me a considerable edge in the QL field because I knew just

what was going on in the rest of the microcomputer and minicomputer market. This not only convinced me that the QL was an excellent machine but that it simply did not have its equal anywhere else.

'The QL was the best computer of all for practical use. Others, like the Amiga, might give you 64,000 colours on the screen at any one time but, for practical purposes, most people would settle for the QL's four or eight. Again, the Amiga has very nice sound and the QL sound is ludicrous, but how many people really want sound?

Development

'For practical use then, the QL was an excellent machine in an excellent development environment and there was no logical reason to move away from it, provided our company was making some money. The argument could be raised, of course, that more money could be made elsewhere, but that is an issue that will have to be considered as time progresses. Digital Precision is still devoted to producing QL software.

'It was against this background that we decided to produce a highly superior word processor for the QL and to call it Perfection. This was undoubtedly needed because, for all its user-friendliness, *Quill* had many disadvantages and this went for all the other QL word processors too, as far as we were concerned.

'Users have been completely spoilt by Quill because of its utter simplicity. It does not, however, have any growth area. When you first start using the program it is fine but you find to your horror a week later when you want it to do something a little more exciting that it just cannot happen. Quill's other weakness lies in its sheer illogicality.

Search facility

'An example of this is the search facility. If you find something you wish to edit on the fifth occurrence then, although you wish to continue the search, Quill will make you abort it. In order, then, to edit the sixth occurrence you have to go back to the first one again, and the second, and the third and so on, which is all completely illogical. Again, if you are using Quill on anything longer than a two-page letter it becomes grossly unwieldy.

'Another alternative to Quill — our own beloved *Editor* — also has drawbacks. To begin with it is not primarily a word processor. It would have been labelled 'Word Processor' and not 'Editor' had it been so. It is a superb program for the technical user and although it will accomplish many word-processing tasks it does not have wysiwyg (what you see is what you get), which is an essential requirement for most users. If, for example, you wish to print a word in italics on Editor it will not appear as italics on the screen but be made to print in italics by embedded control codes. The trouble with control codes is that they screw up your apparent justification on the screen. For straightforward word-processing this was too complicated.

Another popular word processor available on the QL is *text87*, a complex program which can present difficulties to non-technical users weaned on Quill.

'Neither of these three programs gave any sort of positive modelling for the development of Perfection, although it was decided that the simplicity of Quill had to be maintained throughout the project. It was also decided that Perfection had to be so constructed that it could stand alone and be used without referring to the manual — while still being of equivalent power to the top PC word processors like *AmiPro, Word* and *WordPerfect.*

Although advantageous to the user, this latter facility had grave disadvantages for Digital Precision — it made piracy and unlawful copying of the program far more likely. 'We then considered some form of copy protection but all the methods available make life difficult for the user and the program becomes less user friendly — a direct contradiction to what we were trying to achieve. We just could not, we decided, go along with that. It was also unfair to penalise the honest user in our attempts to thwart the dishonest.

Compact power

'Perfection was conceived and very lightly specified by me and produced and programmed by a team led by Steve Sutton, a very gifted machine code programmer — possibly the best machine code programmer who has ever written for the QL. Other team members were Nigel Davies and myself.

'Writing a program entirely in machine code gives it great power within a relatively small space. It also gives it much greater speed enabling it, for example, to search for something at the bottom of a 350 K file and find it in just one second.

'We had about eight consultants who were unpaid and who ranged from computer experts to computer idiots. . . who gave their opinions on the development of the program.

'Now, we listened far more carefully to the idiots than to the boffins. They often came up with interesting points which we would never have thought of. Making an idiot-proof program, as well as writing an idiot-proof manual, is almost impossible. They are clever, unbelievably clever, at finding ways of interpreting things. No matter how we try they will always find ways of misunderstanding things and when we make clarifications they find ways of misunderstanding the clarifications!

'The development of Perfection began in late 1988 when Steve and I got together to discuss what we'd like the program to do. Actual programming work began in 1989, so you must realise that this product has taken two years to complete. It progressed slowly, but steadily, and took much more time than we planned.

Consumed

'We had called the program Perfection and somehow the quest for perfection began to consume us. That cursor for example. You will never have seen a cursor like it but it is difficult to imagine that it took a whole month's work to attain. We had, in fact, achieved 80% of its qualities within the first three days. We could have left it at that and few people would ever have noticed. However, we carried on and spent another 27 days achieving the other 20%.

'Time is money and Perfection took three or four thousand hours of programming time to achieve. Trying to work out this cost theoretically means establishing the commercial pay rates for the programming skills involved. This consisted of highly complex machine code programming in a multitasking environment.

'Perfection is not one program but always between two and four programs running simultaneously with communications protocols between them. This is far beyond the capabilities of the average advanced programmer and so we are talking about a pay rate of about seventy-five pounds an hour! A total sum of over a quarter of a million pounds is not too much to think about.

'There is, obviously, no way we can earn any such amount and so, by any measure, Perfection is not commercially viable. There are, however, intangible benefits both to us and to QL users. With products like Perfection no intelligent QL owner can ever think of discarding the QL in favour of a PC and that, in turn, must help to secure our marketing base.

'Finally, you ask whether we would do it again and the answer must be "no". It's been too hard. It's taken too much time. It's cost blood. OK, we've done it and it's wonderful — for us and for everybody — but we have paid a high price. Steve and I have been devastated, utterly devastated, by the production of Perfection.'

A towel unthrown

Despite his efforts over two years, Freddy Vachha does not sound like a man who is about to throw in the towel and rest on his laurels. So what is he going to do next?

'We are even now in the process of preparing some new products which could be quite exciting. We are also getting ready some ex-PDQL stuff from Chas Dillon to go back on the market,' he says. Not so Olympian as Perfection, perhaps, but it shows that Digital Precision are continuing to keep their eye firmly on the ball, even if they need matchsticks to prop them open!

QL SCENE

Italy calls to the world

Davide Santachiara of Ergon Development in Italy has contacted *QL World* with upgrade, price and payment details on their software list.

There is an active QL scene in Italy, but interaction between the Italians and the rest of the world has suffered from distance and high currency conversion charges. Santachiara has some advice to make the best of this situation.

Ergon's list includes *DEA Intelligent Disassembler*, *MasterBasic*, *SB QL Library Manager*, and *Music Manager* (the latter two reviewed in recent issues of QL World).

All the English manuals have been revised and updated; new copies cost £4 each, plus bank and carriage charges. MasterBasic aid for SuperBasic programmers is now into version 1.30, is compatible with Minerva tokenisation and has been debugged and improved 'drastically'. Owners of the more recent versions of MasterBasic can obtain the new version and manual for £7 plus conversion and carriage. Other prices are: DEA V4.07 £29, QL Library Manager V2.0 £25, MasterBasic V1.03 £25, Music Manager V1.2 £10. All programs listed except DEA are available on mdv as well as disk, for an extra charge of £2 for the cassette. Orders of two programs can claim £2 off, three gets £3 off, four gets £6 off, buying QLM and MBS together gets an extra £2 off plus a free Window Definer. Add £5 to the total order for carriage (which will be by airmail in Europe or surface mail). Add £4 conversion if sending a Eurocheque or any cheque drawn on a currency other than lire. To avoid conversion charges, send a Eurocheque in lire, at the equivalent rate of 2,300 lire to £1 Sterling. If in doubt, ask the foreign section at your bank.

Santachiara goes on to explain why Ergon has not publicised its list more widely in the UK: "Our programs (except Music Manager) are devoted mainly to experienced programmers: QLM and MBS for SuperBasic and DEA for machine coded. Also, there is an understandable fear of non-UK software houses (because of the distance). Although current versions of DEA, MBS and QLM are at a very good quality level, they have a restricted market. A software house must also gain a good reputation, and this can only be achieved after a time. Though we have approached the UK market only recently, I am optimistic and would like to do it properly. In Italy I have sold QL programs – Music Manager, PT Manager (a simple database), StoreHouse QL Connection and others – since 1988, so I have a bit of experience.

'I would also like to add that in Italy there are other people working on strange and esoteric but very professional projects on the QL. I am trying to bring these projects gradually to light and give the authors a little economic recognition as well as personal satisfaction.

Ergon also offer upgrade deals and airmail delivery elsewhere. For more information, contact **Ergon Development, Davide Santachiara, Via Emilio De Marchi 2, I 42100 Reggio Emilia, Italy** for a leaflet. A suitable International Reply Coupon would doubtless be appreciated.

DIY BUNDLED

Simon Goodwin's *DIY Toolkit* disks, marketed by CGH Services, are now being offered in bundles at a considerable discount on the one-off price.

Three bundles are on offer: *QL User Tools*, including MORE, Taskforce, Qlipboard, Add, Change and Monitor, Purge, multi-column DIR, and others (vols. E, J, P, Q, S, V); *Device Toolbox*, including Disk accelerator for EXEC, LBYTES etc., fast pixel and vector graphics, MEMory device, quick disk checker, Task Commander, NET remote command server and others (vols., D, F, G, H, N, T); and *SuperBasic Tools* including DIY1 MultiBasic, SuperBasic token disassembler, POP or TRACE return stack details, FIND, SET, ALIAS, AFTER, REPLACE and FORGET, and others (vols. A, B, C, M, R, U).

Each bundle costs £20 for the six disk set, inclusive of branded 3.5in or 5.25in disks (please specify). Microdrive users should send a blank formatted microcassette for each volume. Payment to DIY Toolkit by UK or Eurocheque, sterling postal orders, bank draft or Sterling. Sorry, no credit cards. "Please don't forget to put your address on all correspondence" pleads yet another dealer. Orders to DIY Toolkit, Cwm Gwen Hall, Pencader, Dyfed, Cymru SA39 9HA. Tel: 0559 384574.

All Format Dates

The next few All Formats Computer Fairs will take place at the following times and venues: December 1, City Hall, Candleriggs, Glasgow; December 14, Horticultural Hall, Westminster, London; December 15, University Sports Centre, Leeds. All fairs run from 10am to 4pm, admission is £4, and information and advanced tickets can be obtained from John Riding on 0225 868100.

The organisers of the Fair are so pleased with the success of the regional venues that they now intend to host around five shows a year at each of them, with new venues to be added. Quanta however has stated that, because QL attendance is concentrating on the London Fair, they 'may follow the lead of other QL traders and only attend London fairs in future, to reduce costs.' This makes a certain sense, as Quanta holds regional meetings of its own when organisers can be found; it is to be hoped that QL traders based in the North will be able to continue to attend northern fairs.

Ironically, Quanta also reports a lack of volunteers to hold a workshop 'further north than our current range'.

SINCLAIR QL WORLD

THE NEW USER GUIDE

SECTION TEN

KEYBOARD INDEX

This month Mike Lloyd begins a new phase in the New User Guide – the Keyword Index. As well as Qdos keywords, the Index will cover keywords in SuperToolkit 2 and Turbo Toolkit, as well as modifications to standard SuperBasic by Minerva and Toolkit 2.

Welcome to the Keyword Index of Sinclair QL World's *New User Guide*. The Index presents every SuperBasic keyword in alphabetical order with each entry including a full explanation of the syntax. Where it is appropriate, brief program snippets demonstrate how the keyword can be used. SuperBasic is a very rich language, with most commands and functions having a wide variety of mandatory and optional parameters. The *QL User Guide* supplied by Sinclair was incomplete in its descriptions of some commands and inaccurate in its treatment of others, which can be mystifying to programmers eager to learn the fundamentals of the language. The QL World New User Guide aims to put right these shortcomings.

Because the majority of QL programmers no longer restrict themselves to standard SuperBasic the additional commands provided by the two most widely used toolkits, Tony Tebby's *Super Toolkit 2* and Digital Precision's *Turbo Toolkit*, have been included in the Index. Readers without these toolkits can judge for themselves whether these extensions to SuperBasic are likely to be of value to them. Modifications to standard SuperBasic by both *Minerva* and Toolkit 2 are highlighted where they occur. The Keyword Index is therefore an extremely valuable and comprehensive reference work.

The Index groups keywords according to their function, such as 'graphics command', 'text function', 'file command' and so on. However, readers should be aware of three more fundamental categories into which all SuperBasic keywords fall: procedures, functions and structures. Procedures 'do things', such as PRINT, SAVE and BEEP. The things that they print, save or beep are called parameters, such as PRINT *text$*, SAVE *"mdv1_myprogram"* and BEEP *4000, 230*. Every SuperBasic command statement begins with a procedural keyword except for LET statements, where the keyword is optional. Functions take zero, one or more arguments, manipulate them in some way and return a value. An example is LET demo$ = FILL$("X", 12). The FILL$ function takes "X" and 12 as its arguments and produces a string of twelve Xs which are 'returned' to the *demo$* variable. In a well-designed language like SuperBasic, functions are easily distinguished from procedures by the presence of brackets after them. The brackets contain any arguments passed to the function. When no parameters are given, such as in BEEPING, the brackets are optional, but it remains good practice to include them nevertheless.

The third category of keywords provides structures. These keywords are used to control the flow of the program by imposing repitition (FOR... NEXT or REPeat... END REPeat) or by diversion (GOTO, IF... THEN). A special category of structural keywords permit programmers to extend SuperBasic with the inclusion of their own procedures and functions. The only limitation is that the new keywords must be capable of being defined using conventional SuperBasic.

Most programming languages allow statements to be constructed with a confusing range of defaults and optional parameters. User guides must try to represent optionality in the language syntax, but often do so in a way which actually obscures the command structure they are trying to represent.

The Keyword Index provides the full syntax for each keyword and explains the options and defaults in the accompanying text. Keyword variations (LINE and LINE_R) are generally dealt with together in order to avoid repetition. The parameters used to demonstrate the syntax give a clue to what they represent, so 'ELLIPSE xpos, ypos, radius' suggest three numeric values representing the co-ordinates of the centre of an ellipse and a measure of its radius. 'PRINT text$' suggests a text string. Where commands such as PRINT have a huge number of variations several examples of statements are given. Many of these points are demonstrated by the following example:

CIRCLE **#chan, xpos, ypos, radius, distort, angle [;xpos, ypos, *etc*]**
CIRCLE_R **#chan, xpos, ypos, radius, distort, angle [;xpos, ypos, *etc*]**

GRAPHICS COMMAND

#chan	(optional) channel number (Window 1 is default)
xpos, ypos	co-ordinates of circle centre. CIRCLE uses absolute co-ordinates, CIRCLE_R uses relative co-ordinates.
radius	radius of circle in graphics units
distort	(optional) ratio between major and minor axes of an ellipse, between 0 and 1
angle	(optional) orientation of major axis (0 = vertical)

CIRCLE uses absolute co-ordinates; CIRCLE_R uses relative co-ordinates. CIRCLE draws circles and ellipses on the screen in the current INK colour using the graphics co-ordinates system. IF FILL 1 is in effect the circles will be solid. A bug causes "colour leaks" if FILL 1 is not issued between successive CIRCLE commands. By separating sets of parameters by semi-colons a single CIRCLE command can draw many circles. The CIRCLE and ELLIPSE commands are absolutely identical.

```
100 FOR x = 1 TO 100: CIRCLE 50,50, x*2, 0.3, x/20*PI
```

ABS(x)
[SuperBasic]
ABS(x, y, z, etc.)
[Minerva]

MATHS FUNCTION

x	a numeric expression.
x, y, z	a set of numeric expressions

ABS returns the absolute value of a single numeric parameter, ie ABS(6) retruns 6 and ABS(-3) returns 3. The Minerva ROM extends ABS to allow further parameters; ABS then returns the square root of the sum of the squares of the parameters.

ACOS(x)
ACOT(x)
ASIN(x)
ATAN(x)
ATAN(xpos, ypos)
[Minerva]

TRIGONOMETRY FUNCTIONS

x	a numeric expression between -1 and 1
xpos, ypos	the graphics co-ordinates of a point

The arc cosine is the inverse of the cosine, or cos(x^-1). The other functions provide the inverse of the cotangent, sine and tangent respectively. The User Guide states wrongly that there is no effective limit to the size of the parameter: values greater than 1 produce an overflow of error. The Minerva rom permits an additional parameter to be added to ATAN which more accurately calculates ATAN(y/x). Minerva's ATAN allows you to pass the two co-ordinates of a point on the circumference of an imaginary circle with its centre at 0,0 (ie it is the relative position which is important, no the absolute location): ATAN will then return the angle from the centre of the given point, with the top of the circle being 0 radians and the bottom being pi radians.

ADATE seconds

TIME/DATE COMMAND

seconds	a numeric expression

ADATE adjusts the QL's internal clock by a given number of seconds. Negative values move the clock backwards, positive values move the time forward. ADATE 60*60*24*7 advances the QL's clock by exactly one week.

AJOB id, priority
[Super Toolkit II]

AJOB name, priority

[Super Toolkit II]

TASK COMMAND

id	the task's QDOS number
name	the name of the task
priority	a value typically between 1 and 128

AJOB activates a task (or job) with the given priority. The higher the priority, the greater the share of CPU time the task will be given. A task's ID can be found by listing tasks using the JOB command.

ALARM hour, minute

[Super Toolkit II]

TIM/DATE COMMAND

hour	a value between 0 and 24 representing the hour of the day.
minute	a value between 0 and 59 representing the minute of the hour.

ALARM causes the QL's buzzer to sound at a given time.

ALCHP(bytes)

[Super Toolkit II]

ALLOCATION

(bytes, task, tag)

[Turbo Toolkit]

MEMORY FUNCTIONS

bytes	number of bytes to be reserved
task	(optional) task number
tag	(optional) task tag

ALCHP and ALLOCATION perform the same task: they allocate space from the QL's common heap even when several tasks are running. The SuperBasic equivalent, RESPR, only reserves memory when SuperBasic alone is running. The Minerva rom provides the same result by rewriting the RESPR command. All these commands return the base address of the reserved area.

ALTKEY char$,

command1$,
command2$, *etc.*

[Super Toolkit II]

CONTROL COMMAND

char$	a single keyboard character, eg "A" or CHR$(45)
command$	a string containing valid SuperBasic statements

ALTKEY associates one or more statements with a single keypress. The command ALTKEY "L", "CLS#2: LIST","" clears the listing window and lists the current program when the key combination ALT-L is pressed. ALTKEY settings are cancelled when the QL is reset, therefore commonly used ones are often placed in boot files. Where multiple command strings are used a linefeed is inserted between each one. To force a linefeed at the end of a set of commands (as in the example above) a null string is added. ALTKEY settings remain effective when tasks such as Quill are running, although care should be taken to avoid conflicts with keypresses used in the program.

ARC #chan, xpos,

ypos TO x2pos, y2pos,
angle; x3pos,
y3pos TO *etc*

ARC_R #chan, xpos,

ypos TO x2pos, y2pos,
angle; x3pos,
y3pos TO *etc*

GRAPHICS COMMAND

#chan	(optional) screen channel number
xpos, ypos	(optional) start co-ordinates for the line
x2pos, y2pos	end co-ordinates for the line
angle	degree of curvature in radians

ARC draws a curved line using absolute graphics co-ordinates; ARC_R uses co-ordinates relative to the current graphics cursor. When the first pair of co-ordinates are omitted the line starts at the current graphics cursor location. Multiple curves can be drawn using a single ARC command with each set of parameters separated by a semi-colon. Positive values of **angle** cause an anti-clockwise curve; negative values cause a clockwise curve. A semicircle is specified using an angle of pi, therefore the centre of a football field can be obtained by:

```
100 LINE 50,40 TO 50,60
110 ARC 50,40 TO 50,60, PI
120 ARC 50,60 TO 50,40, PI
```

AT #chan, charline,

charcolumn

[Late QL roms]

AT #chan, charcolumn,
charline
[Early QL roms]

TEXT COMMAND

chan — (optional) screen channel number
charline — a value representing the text line
charcolumn — a value representing the text column

AT moves the text cursor to the given position, which must be a valid character position within the specified window. The effect of an AT command is seen with the next PRINT statement. Early QL roms (those with dongles attached to them) reversed the order of the parameters. There can be very few such machines still in use.

AUTO startline,
increment

CONTROL COMMAND

startline — (optional) an integer in the range 1-32767, default 100
increment — (optional) an integer, default 10

AUTO generates program line numbers beginning at **startline** and incrementing by **increment**. If the line numbers are already taken up by the program their contents will be displayed in the editing window. AUTO is therefore identical to EDIT except for its default settings. If the **startline** value is omitted, a comma must precede the **increment** value to distinguish it from a starting value.

BASIC_B%(offset)
[Turbo Toolkit]
BASIC_W%(offset)
[Turbo Toolkit]
BASIC_L(offset)
[Turbo Toolkit]
BASIC_POINTER (offset)
[Turbo Toolkit]

MEMORY COMMAND

offset — an offset from the start of the SuperBasic system variable area (must be an even number for BASIC_W%, BASIC_POINTER and BASIC_L.

Like all computer operating systems, Qdos needs to store information in ram relating to the position of the cursor, the colour of the screen, the size of characters and so on. The QL stores blocks of standard information, name tables for variables and channel blocks for screens and other devices. Unusually, Qdos is also prone to shunting this information round ram as tasks are added and deleted from memory. The internal layout of the information blocks do not change, so provided that the start of the block can be located a particular value can be traced from its offset from the starting byte. The Turbo Toolkit provides a whole suite of functions which automatically find system information blocks, but programmers must discover for themselves how the contents are arranged.

BASIC_B% returns a one-byte value, BASIC_W% returns a two-byte value and BASIC_L returns a four-byte value. Incidentally, BASIC_L is not an integer (ie it does not end in %) because four-byte numbers potentially exceed the QL's miserly integer range. BASIC_POINTTER is identical to BASIC_L but is included in the Toolkit preseumably to improve program readability: many four-byte values in the system information tables are pointers to other addresses in the QL's memory.

BASIC_INDEX% ("keyword")
[Turbo Toolkit]
BASIC_NAME$(x)
[Turbo Toolkit]

MEMORY COMMAND

"keyword" — a string expression containing a valid SuperBasic keyword or language extension.
x — a valid integer offset.

BASIC_INDEX locates the Qdos name table and searches for the given keyword. The search is case sensitive, so capitals must be used where SuperBasic uses them. Searches for structure keywords such as GOSUB and DEFine will fail as they are stored elsewhere in the QL's memory. If a match is found the function returns the keyword's position in the name table list. BASIC_NAME$ does the opposite by returning the name of the keyword at position X in the name table.

BAUD rate

CHANNEL COMMAND

rate — a valid baud rate, ie: 75, 300, 600, 1200, 2400, 4800, 9600 or 19200

The baud rate describes the speed with which information is passed through the RS232 ports at the back of the QL. The lower baud rates (baud = bits per second) are most often used by modems to send data across telephone lines. The standard rate for printers is 9600 baud, and this is the default setting when the QL is switched on or reset. Before communication can occur between the QL and a device both must have identical baud rate and data transfer protocol settings. Protocol settings can be set using the OPEN command. The QL can only transmit on 19200 baud, not receive. Although the QL has two RS232 serial ports their transmission speeds cannot be set separately.

AT #chan, charcolumn,
charline
[Early QL roms]

TEXT COMMAND

chan	(optional) screen channel number
charline	a value representing the text line
charcolumn	a value representing the text column

AT moves the text cursor to the given position, which must be a valid character position within the specified window. The effect of an AT command is seen with the next PRINT statement. Early QL roms (those with dongles attached to them) reversed the order of the parameters. There can be very few such machines still in use.

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BASIC_L(offset)
[Turbo Toolkit]
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Animation and Fractal graphics

Simon Goodwin explores QL animation and fractal graphics.

This article features three short programs that generate intricate graphics patterns and effects with simple SuperBasic loops. Two of the programs make 'fractal' displays: self-referential images with infinitely detailed features.

These loops illustrate major styles of programming; one is iterative, the other recursive. The final program generates multicoloured, moving patterns that bounce around the screen or any window.

SuperBasic supports a plethora of graphics commands, built-in and available as Toolkit extensions. Some commands use pixel coordinates in a window, like BLOCK and the *DIY Toolkit* extensions PLOT and DRAW. Pixel coordinates are used in the second and third listings.

The rom graphics routines were originally programmed for Sinclair by GST, and retained from the prototype software when Tony Tebby's *Qdos* was chosen for the final model. POINT and LINE are relatively slow but sophisticated. They allow decimal coordinates, shifting, scaling and clipping arcs and lines in the window.

SuperBasic supplies a further layer of control for **listing one** adding 'turtle graphics' commands to the Qdos repertoire. These let you specify screen locations with a mixture of distances and angles, in the styles of the versatile *Big Trak* computer toy or *Logo*, Seymour Papert's educational programming language.

Colour choices

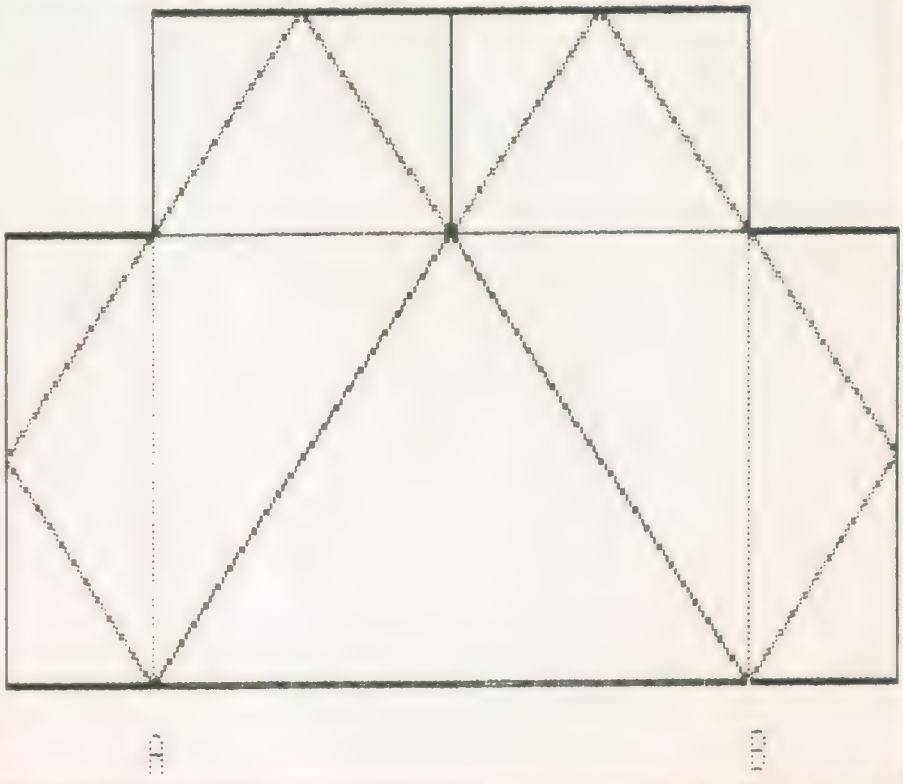
With just eight possibilities (or 16 on a Thor XVI) QL colour choices may seem trivial, yet they repay thought. All these programs use a black background. This gives best contrast and apparent depth, and the image appears larger because the border around the screen pixels is black. Monitors, tv, video recorders and human eyes have their highest resolution in monochrome, rather than colour.

The brain and the eye associate area of matching colour, so that is an effective way to distinguish sections of a picture. This effect extends to simple patterns, so the QL's 256 'stippled' advance on the eight binary combinations of blue, red and green. **Listing one** uses colour to distinguish between mixtures of two colours are a welcome successive plots. **Listing three** cycles through the full colour range, at varying intervals.

It is often a mistake to use two adjacent colours for INK and background. If the brightness is similar — as for red and green in MODE 4, or cyan and green in MODE 8 — poor screens will not show edges accurately. This obscures detail, although it can improve the effect of stipples. A difference of three or more in Qdos colour value, 0 — 7, should ensure strong contrast on most screens; if in doubt, remember that bright colour pairs merge most easily.

If you get tired of the usual QL display colours you might shuffle connections in your RGB monitor lead. Exchange the blue and red connections to get blue instead of red in Mode 4, and a MODE 8 brightness sequence that goes 0, 2, 1, 3, 4, 6, 5, 7! This makes a change, but some programs may look worse as a result.

More complicated arrangements pub-



lished in June's *Quanta*, have used switches to reassign the colours. Spem's QL Video Digitiser has three faders so you can set the level of individual RGB components, when using an analogue monitor.

Amiga Qdos emulator 3.03 only supports MODE 4, which allows four colours. Normally these correspond to the QL's Black, Red, Green and White, but John Alexander tells me that each of these can be assigned from the full palette of 4096 colours, using POKE_W commands to set the memory-mapped palette registers. I expect something similar can be done with Qdos on an ST, with 512 colours, or an STE, with a palette of 4096.

The 'C Curve' is an intricate pattern with a simple-sounding name. It traces paths from one point to another alongside, using a succession of routes. Each path has more bend than the one before, and after a while intricate patterns appear en route.

The first curve is a direct horizontal line between the two points. Each new curve replaces previous straight lines with two lines that meet at right-angles.

The recursive rule is ideal for the QL's inbuilt **turtle graphics** commands, which let you order an invisible pen around the screen with MOVE and TURN commands. Turtle graphics are not very fast, because of the extra calculations they involve, but they are valuable because they make some graphics programs much easier to write.

Listing one gives the program, which runs on any QL or emulator. The C Curve is a continuous line, so each iteration starts by putting the 'pen' down on the screen, so that subsequent MOVE and TURN commands leave a trail across the screen.

The first few curves are very simple. **Figure one** illustrates the first five routes starting with a straight line, then a chevron, a staple, and so on. All these are simple enough — but later the lines fold back on themselves, and interesting patterns appear.

Figure two shows the 14th curve: a sequence of strange shapes, each resembling the ones around it in overall plan, and in details too. See the big pattern that hangs from the top of the curve, and the small copy of it, upside down, near its bottom edge.

There are copies of that shape at either end of the curve, and larger and small versions all around. Rather like structures in the Mandelbrot set, each pattern is flanked by minatures of itself, and so on down in scale, to the limit of the plot.

It is remarkable that such a detailed shape is generated by progressively adding corners to straight lines. The emerging theory of 'chaos' sets out to explain such miracles. There is no theoretical limit to the intricacy of fractals, although display resolution and calculation delays constrain explorers.

Listing one changes the INK for each curve, so you can build up a colour display. Press C to clear the screen and draw the next curve, or N to draw the next on top of the existing display. To run the program in MODE 8, replace '2' with '1' twice in line 210. Line 160 sets the initial colour. Window #1 should be wider than it is tall, or the right-hand end of the image will be cut off.

Whatever the scale, the entire image is drawn by Gus Chandler's procedure C_CURVE, from line 370 to 440. This draws a line at a given angle, breaking it up into sections if it is more than a certain limiting length. The same procedure draws every part, using two sections at 45 degrees to the original angle, and adjusting the lengths to end up in the same place.

Recursive programming is powerful, elegant and favoured by computer scientists, but it is prohibited in new British Ministry of Defence rules for 'safety critical' software. This will make some programs harder to write than would otherwise be the case. I doubt they will be safer, but perhaps they will be easier to test, as a result.

Sierpinski's Gasket

The second program draws a symmetrical pattern known as Sierpinski's Gasket. It uses another simple rule to fill a triangular area with a grid of triangles within triangles that receeds to infinity. This is a simple two dimensional fractal related to the 3D Menger Sponge, which has infinite surface area and zero volume!

Starting from a random point inside the triangle, plot the point on the screen, then step half the distance towards one of the three corners, chosen at random, and carry on from there. As successive points are randomly plotted they form into an infinite succession of regular nested triangles. The image seems to fade up from nowhere as the program runs.

Some points are visited, others are not. A few 'wild' pixels are set if the initial point is not part of the pattern, but soon the program hits upon the underlying pattern, or fractal 'attractor'; thereafter, all subsequent pixels fill in more and more of the gasket.

The program runs forever, or at least until you reset, turn off the computer, or press CTRL and Space to stop SuperBasic. The longer it runs, the more complete the picture, but you should get the idea in a few seconds.

Listing two uses the fast PLOT command introduced in the September 1989 *QL World*. If you lack that command you could use BLOCK 1,1,x%,y%,7 instead of PLOT x%,y% at line 250. Lines 170 to 190 are optional; they use vector graphics to draw a triangular border.

Lines 200 to 220 store the coordinates of the three corners of the triangle in an array, for convenience later. Each iteration of the loop from line 250 to 300 adds one point to the display. The next corner to be approached is determined by a random number, 1, 2 or 3.

QL WORLD DECEMBER 1991, LISTING 1

```
100 REMark Recursive SuperBasic C Curves
110 REMark Gus Chandler & Simon N Goodwin
120 :
130 root2=SQRT(2)
140 base=80
150 limit=89
160 colour=2
170 INK colour : PAPER 0 : MODE 4
180 SCALE 110,-25,0 : CSIZE 0,0 : BLANK
190 :
200 REPeat curve
210   colour=colour+2 : IF colour>7 : colour=2
220   INK colour
230   REPeat keys
240     k$=INKEY$(-1)
250     IF k$=="e" : STOP
260     IF k$=="c" : BLANK
270     IF k$=="n" OR k$=="c" : EXIT keys
280   END REPeat keys
290   POINT 15,20
300   PENDOWN
310   x%=30 : y%=20
320   C_CURVE base,0
330   limit=limit*.7
340 END REPeat curve
350 STOP
360 :
370 DEFine PROCedure C_CURVE(length,angle)
380   IF length < limit
390     TURNTO angle : MOVE length
400   ELSE
410     C_CURVE (length/root2),(angle+45)
420     C_CURVE (length/root2),(angle-45)
430   END IF
440 END DEFine
450 :
460 DEFine PROCedure BLANK
470   CLS
480   PRINT , "N for next on top",
490   PRINT "E to end" , "C for next, clear"
500 END DEFine
```

QL WORLD DECEMBER 1991, LISTING 2

```
100 REMark SuperBasic Sierpinski Gasket
110 REMark Gus Chandler & Simon Goodwin
120 REMark Uses DIY Toolkit PLOT & DRAW
130 :
140 REMark Tidy screen and draw outline
150 MODE 4 : WINDOW 512,256,0,0
160 INK 7 : PAPER 0 : CLS
170 PLOT 0,255 : DRAW 500,255
180 PLOT 250,0 : DRAW 0,255
190 PLOT 250,0 : DRAW 500,255
195 REMark Store the corner co-ordinates
197 DIM pos%(3,2)
200 pos%(1,1)=0 : pos%(1,2)=255
210 pos%(2,1)=500 : pos%(2,2)=255
220 pos%(3,1)=250 : pos%(3,2)=0
225 REMark Pick a random start point
230 x=200+RND(100)
240 y=RND(100)+100
250 REPeat iterate
260   PLOT x,y
270   corner=RND(1 TO 3)
280   x=(x+pos%(corner,1)) / 2
290   y=(y+pos%(corner,2)) / 2
300 END REPeat iterate
```

QL WORLD DECEMBER 1991, LISTING 3

```
100 REMark QDOS/ARGOS  Kinetic String animation
110 REMark By Simon N Goodwin, after Louis Cesa
120 REMark Version 0.9, tested 27th September 1991
130 REMark Uses DIY Toolkit CHAN_WX, CHAN_L, PLOT & DRAW
140 REMark TURBO optimisation directives (up to line 220)
150 IMPLICIT% x1,x2,y1,y2,dx1,dx2,dy1,dy2,stripe,bounce
160 IMPLICIT% place,delta,limit,here,c,tx1,tx2,ty1,ty2
170 IMPLICIT% xmax,ymax,col,size
180 IF COMPILED
190   OPEN #1,"CON_512x256a000x000"
200 ELSE
210   WINDOW 512,256,0,0
220 END IF
230 INPUT "Pattern size"!size :REMark Maximum lines at once
240 DIM c(size),tx1(size),tx2(size),ty1(size),ty2(size)
250 OVER -1 : RANDOMISE
260 xmax=CHAN_WX(#1,28)-1 : ymax=CHAN_WX(#1,30)-1
270 LET x1=100 : x2=200 : y1=RND(150) : y2=RND(100 TO 125)
280 LET dx1=1 : dx2=-1 : dy1=-1 : dy2=1
290 LET stripe=1 : bounce=1 : col=7
300 REPeat animate
310   FOR a=1 TO size
320     INK c(a)
330     PLOT tx1(a),ty1(a)
340     DRAW tx2(a),ty2(a)
350     bounce=bounce-1 : stripe=stripe-1
360     IF stripe=0
370       stripe=RND(5 TO 50)
380       REPeat pick_colour
390         col=RND(255) : INK col
400         IF CHAN_L(#1,62) : EXIT pick_colour
410       END REPeat pick_colour
420     END IF
430     IF bounce=0
440       bounce=RND(5 TO 100)
450       IF RND(1)
460         dx1=RND(-9 TO 9) : dy1=RND(-4 TO 4)
470       ELSE
480         dx2=RND(-9 TO 9) : dy2=RND(-4 TO 4)
490       END IF
500     END IF
510     ADVANCE x1,dx1,xmax : ADVANCE y1,dy1,ymax
520     ADVANCE x2,dx2,xmax : ADVANCE y2,dy2,ymax
530     INK col : c(a)=col
540     tx1(a)=x1 : ty1(a)=y1 : tx2(a)=x2 : ty2(a)=y2
550     PLOT x1,y1 : DRAW tx2(a),ty2(a)
560   END FOR a
570 END REPeat animate
580 :
590 REFERENCE place,delta
600 DEFine PROCedure ADVANCE(place,delta,limit)
610 LOCal here
620 here=place+delta
630 IF here<0 OR here>limit : here=place : delta=-delta
640 place=here
650 END DEFine ADVANCE
```

Listing three employs tricks that first appeared in video games, such as Atari's classic abstract game *QIX*, about a decade ago. A moving bundle of lines tumbles around the window, twisting, bouncing and changing colour as it moves. The algorithm was described in the November 1980 issue of *Byte*, a bulky American computer magazine, but its elements can be traced back to the first tv games.

Early video games had low display resolution, and very little processing power. They used hundreds of TTL chips, or later one lsi array, rather than a full-blown computer. It was feasible to display moving blocks, and game designers got used to bouncing them around the screen, first between 'bats' in tennis games and later from edges too, in games like *TV Squash* and *Breakout*.

Louis Cesa's *Kinetic String* algorithm expanded the moving dot idea to suit improved screen resolution by drawing lines between two moving points. As successive lines are drawn the points converge, diverge, or bounce; the eye and brain interpret the patterns as surfaces defining planes in three dimensions. Curves and stripes are overlaid by interference 'beats' between the screen resolution, stipple colours and diagonal lines.

This is a good start, but it's only a half of the secret. If the program keeps on drawing lines the screen will soon fill up, and the sense of movement and perspective will be lost as the screen fills with a jumble of colour.

Listing three gives the impression of a moving object because it stores the co-ordinates of each line as it is drawn. After a certain number of lines has appeared it starts to 'undraw' earlier lines, so the whole pattern appears to move. Once a line has disappeared the storage space used to hold its details can be re-used for a new line.

The Byte article is vague about the method used to 'undraw' a line, but this turns out to be quite easy in SuperBasic. We could just overdraw the previous line

in black — but this deletes any background, perhaps including other lines that have been drawn more recently.

Instead, I set OVER -1 before plotting any lines, and draw the line again, in the same colour, to erase it. This restores the old background, so several bundles can wander around a single window.

Every so often a new INK colour is chosen, or the course of one of the points changes, so there is no risk of the pattern getting stuck. These events are introduced at random intervals, and their frequency is a matter of taste — adjust the random numbers to suit yourself.

Stipple colours that result in an ink mask of zero are excluded, as these are invisible when OVER -1 is set. The test on line 400 uses the DIY Toolkit CHAN_L function to detect an 'all black' mask. Lines 380 and 410 repeat the test if necessary.

Line 260 uses CHAN_W% to read the window height and width. Skip the test, and set the variables directly, in units of MODE 4 pixels, if you lack these functions, eg:

```
260 xmax=511 : ymax=255
```

and lose lines 380, 400, 410.

Listing three uses all the stippled colours and fast PLOT and DRAW commands, You get a similar but slower effect if you replace these with standard LINE commands, but you will need to adjust SCALE, XMAX and YMAX to keep the image inside the window, as the LINE coordinates system does not correspond to pixels directly.

Listing three is a prime candidate for multitasking in that it generates a moving image that can move over any background. Lines 150 to 200, 220 and 590 are *Turbo* directives that ensure top speed, and should be missed out if you do not own Turbo; compile with 0 windows copied, to avoid disturbing the screen when a new task loads.

The program starts by asking for the 'Pattern size', the number of lines to be shown at a time. Try any value from one to several hundreds. EXEC two or three copies of the compiled program, generating patterns that bounce behind and in front of each other. Adjust task priorities, window positions and pattern lengths for best results, and have fun.

Program size

If you want to save typing and obtain the fast graphics commands and a compiled 'kinetic' task besides, note that programs 2 and 3 are included in *DIY Toolkit Volume G*, along with other SuperBasic graphics programs, PLOT, DRAW, CHAN and PIXEL% extensions, documentations and source code. The volume costs £7, or £20 on disk with five other volumes of 'device tools'. Call DIY Toolkit on (0559) 384574, or write to Cwm Gwen Hall, Pencader, Dyfed, Cymru SA39 9HA.

Sierpinski's Gasket and many other fractals are introduced and simply explained in James Gleick's best-selling paperback book *Chaos, Making a New Science*, published by Cardinal, ISBN 0-7474-0413-5. Fractal programmers should read John De Rivaz's excellent bimonthly fanzine *Fractal Report*, which often features SuperBasic programs, as well as images and algorithms that can be translated from other systems. For a free copy, send an A4 to **Fractal Report, West Towan House, Porthtowan, Truro, Cornwall TR4 8AX.**

Commercial QL fractal programs are supplied by CGH Services, and Progs — via Dilwyn Jones in the UK. *Quick Mandelbrot* (£10, 128K+) and *Qractal* (£20, 512K+) explore the intricate and infinite Mandelbrot Set. Qractal is deservedly twice the price of its rival, with similar resolution but many more features. Both were reviewed in QL World in June; a new version of Quick Mandelbrot is advertised, adding Julia set displays for an extra £2.50.

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SOFTWARE FILE

The beta-tester emerges: Bryan Davies settles down with Perfection.

INFORMATION:
Program: *Perfection* V2.04
Price: £119.95 with spelling-checker. £79.95 without
Supplier: Digital Precision Ltd., 222 The Avenue, Chingford, London E4 9SE. Tel: (081) 527 5493

When Digital Precision suggested that buyers of *The Editor* could 'chuck *Quill* out', doubts were expressed, but that statement can truly be applied now to *Perfection*. Quill simply isn't in the same league. As lack of speed has always been a major drawback of Quill, Perfection has half-won the battle by the time anyone has used it for a few minutes.

Perfection needs at least 256 KB of memory; the program itself takes 150 KB and loaded files take about as much space as they do on disk. It will run on Thors and the Atari QL emulator.

The Back-up routine produces a working copy of Perfection. You are advised to use the Configurator routine, which is a visually attractive, simple and comprehensive default-setting program.

The two Boot files contain REMark lines, specifying changes to suit system configuration. The start-up screen offers the options to use Configurator or Create_Printer_Data; if neither are chosen, the main program is run. For many users, there will be no need to do anything initially, as the provided files will be satisfactory.

Perfection is aimed at Quill users. The command menu structure looks similar, and the default screen fount is the same, so the new user should feel at home. Perfection gives you the same screen features as Quill: bold, superscript, subscript and underlined text are shown as such, and italic text is shown slanted.

It was inevitable that any successor to Quill would differ from it in several ways. The Psion program is easy to learn, and adequate for small documents, but it begins to creak when much more than simple letters are required of it. Perfection is little concerned by the size of document, and provides many more functions, including several major ones. The obvious functions are spelling checking and the combination of graphics with text. The spell-checker is still being worked on but should be available by the time you read this.

So, what is the answer to the question 'does Perfection solve the problems that drive Quill users crazy?' My feeling is that users will generally say 'yes'. It is much faster than Quill, handles large documents without murmur, and doesn't throw tantrums and cause your life's work to be lost; the spell-check function will be a 'natural' extension, some graphics-import capability is provided, most file types can be handled (it is good for programmers too), and it isn't a memory hog.

There are far too many editing commands for all of them to be mentioned here, but some of the important ones follow. Different-coloured highlight Strips enable printer functions to be called without padding the text with visible codes. You could use Strips to select different printer character pitches.

Whenever any type attribute is changed, it takes effect from the cursor to the end of the document; you have to give the 'off' command to make the remainder of the text return to normal. This seems rather strange at first, but you get used to it. There is a distinct lag before the display shows a newly-set attribute, and this lag also occurs with such things as the page-break line and the page number indicator. This does not create any problem.

Margins and tabs can be reset at any time; the effect is on new text only; existing text remains unchanged, unless the <reformat pAra> or <reformat hEreon> command is used on it. This allows changes of format at any point within a document. The printer will see changes *at the point they occur* and will not alter the format of previous text. Reformatting is not automatic. After changing the right margin, you can go back to previous text and insert or delete without line-wrap action being initiated on the current line unless you extend the text out to the right margin previously set with the Configurator (if it is larger than the new setting). A reformat command can be given for the whole of the current paragraph, for the current paragraph from the cursor point forwards, or for the remainder of the document from the cursor point forwards. It is not a fast process and is best left till editing is complete.

The left margin can be set in both the document and the printer data file, and there are good reasons to set it in the latter. If a left margin other than 1 is set on-screen, and the underline function is used, the on-screen margin area will have underlining in it if the underlined text spans two lines; the same happens on the print-out currently, but version 2.05 will fix this problem. If a change of character pitch is made and it spans two lines, the margin width will change. Neither of these problems occurs when the left margin is set in the printer data file. Having no blank space at the left of the screen also means that more characters can be displayed on a line, but it is a pity that the leftmost column is then identified as 1 regardless of what the actual position will be when the text is printed.

Justification is displayed on-screen. The modes offered are flush left, fully justified, flush right, and centred. Printouts should look essentially as the screen does, as far as word spacing is concerned, but right justification is not maintained when proportionally spaced print is used. The <Reinstate line> command allows deleted text to be put back on the screen, so long as the cursor has not been moved off the line concerned at all.

Search and Replace operations can be case-sensitive or -insensitive, forwards or backwards. The search string can be the one used in the previous operation, or a new one. The string can include attributes, such as Emphasised, making it possible to replace one

attribute by another – eg replace underline by bold. The cursor position is the starting point for both forward and backward operations. A separate command permits Search or Replace operations to be repeated with existing strings.

The codes which are sent to the printer to indicate changes of attribute are not shown on-screen, except when the <hidden Codes> command is used to display them. To enter them, you first have to key CTRL-£, which is a 'primer' character that lets the program know the next character is 'special'. You cannot use the same keying that indicates the attribute to the printer, but there is a separate list of keyings in the manual. Replace can be a one-by-one operation <Replace>, or a global <Replace (All)>. The latter is always a risky mode, and you need to be careful when using it with the 'NQ' (No Query) indicator showing. When this is done in a large document the screen remains unchanged for quite a long time, if there are a lot of replacements to be made; no status indication is given. You can use ESC to stop the operation. In general, both Search and Replace are fast operations.

Page breaks are important and Perfection has two forms. When the page length is set, through the Configurator or during creation/editing of a document, the program displays a red line underneath the set line (soft page break). This is non-deletable. The user can place a hard page break wherever one is required, and it is displayed as a row of black + signs on a white background. This *can* be deleted. The page length can be reset at any time and the new setting takes effect on the whole document immediately.

Flexible format

Headers and footers can be created, as in Quill, but with a more flexible format. The limitation on size is high enough for anything on A4 paper, typestyle attributes can be used, and page numbers can be set to be printed automatically at desired positions and in various formats. The normal editing window is used to set up headers and footers, but they are not displayed *during* normal editing. Page breaks are positioned to allow for header and footer.

Two windows, vertically positioned and adjustable in height, can be used to display different parts of the same document. Navigation of the cursor between them is by pressing F5. Once in a window, you can move the cursor to any point in the file and perform any editing commands. A change in one window won't necessarily be reflected in the other, until you move back to it. Text can be copied or moved from one window to the other (from one part of the document to another) – a very handy function.

Eight markers are available to be set anywhere in a document. Movement to markers is fast. The set-marker keying in the manual is printed as SHIFT-ALT-1 to 8, but ALT-SHIFT-1 to 8 was required on my system.

Perfection seems relatively oblivious of document size, and the limit is 2MB! You need high-density drives to be able to save files larger than about 700 KB.

Settings which DP has set as defaults are not displayed. For example, full justification is the mode as supplied, but there is nothing on the status line to show that. If you subsequently use the <Justification> command, it cycles to the next mode each time you use it, and the mode will be indicated on the status line; 'CJ' for centred, 'RJ' for flush right, etc. Two-character status displays for eleven functions in all appear whenever appropriate. 'CAPS' is displayed if the CAPS LOCK is on. Permanent indication is given of the cursor column number, the line number (within the document), the total number of lines in the document, the number of the current page (revised to reflect any page numbering change set by the user), and the character code of the cursor character.

Status lines

There is an alternative status line, which shows the number of characters in the document, total number of words, total pages and the number of the line *within the current page*. The average user would perhaps think the last one of these ought to be on the default status line. The alternate status line is replaced by the usual one when the cursor is moved. Messages overwrite (temporarily) the status line indicators. The manual lists four pages of messages, with brief explanations of possible reasons for them.

The Load command is an all-purpose one. You can load Quill_Doc files, SuperBasic program files, Ascii-format text files, and Psion Export files, as well as Perfection's files. Even corrupted files should be loadable, up to the point where the corruption occurs; _Doc files load in surprisingly good shape, looking much as they do in Quill. Settings such as margins, justification and tabs are removed from the incoming file, as are headers and footers. It is suggested that any text files in alien format are flush-left justified before loading into Perfection. Returning a file to its original format is a question of setting the same values after loading, the using the Reformat command.

Merge command

There is a Merge command, to allow additional files to be added to any point within a current one. This is intended for Ascii-format files only, not for Perfection's files, Quill files etc. You *can* Merge such files, but all their formatting codes come with them. Files from *The Editor can* be loaded this way. The basic Save command creates Perfection-format files, regardless of the file format when loaded. The full 36 characters that Qdos accepts are allowable in file names. Confirmation is requested if a Save is initiated with an existing file name. To save a document without the program's own format information, there is the <Export file> command. This creates a file suitable for import into other programs. It can also be used with SuperBasic programs, with the reservation (not made in the manual) that (line Wrap) needs to be switched off if editing of the SB file involves use of the ENTER key (program lines get concatenated and corrupted by the ENTER codes otherwise).

One thing the user might miss is the ability to do housekeeping from within the program. Unlike Quill, there is no directory function and no format, delete or back-up. You can use CTRL-C to return (temporarily) to SB and perform file operations.

Perfection has a dual-command structure, one access method being via Quill-like menus and the F3 key, the other more for the 'hacker', with the CTRL, ALT and SHIFT keys being used in combination with other keys. Both methods are available to users all the time, the theory being that confirmed Quill-users will prefer the F3-plus-menu approach, and programming types will use the other one, but neither category of user is denied the option to use the other's approach. Some of the key combinations are rather daunting, although keyings for frequently-used commands such as Go To Bottom (CTRL-B) are easily memorised. They are much quicker than the menus are.

The multiplicity of functions requires a multi-level menu structure, and you may have to press F3 as many as three times, then some other keys, to get what you need. Users of the ALTKEY function will be pleased to know that most of the two-key combinations using ALT have been left alone, for use with existing macros.

Await index

F1 calls-up the help screen, and several text-editing commands can be used *within* the help pages. The Search function works, as do the macro cursor movement keyings. There is a README file on the supplied disk which acts as a tutorial for Perfection features.

The manual has 104 sides of detailed information. There is no index yet but there *is* a glossary of many of the terms (eg Pseudo Space). The manual is well-written and covers most topics adequately, although more detail would help on some unfamiliar subjects.

The sluggish cursor drives many heavy users away from Quill. Perfection overcomes the sluggish response by using the lazy-screen technique; only one line of the screen is repainted when the up/down cursor key is used, rather than the entire screen (as with Quill). The lazy screen works so well that one can scroll through text faster than on an average PC. The penalty is that users may not like the screen presentation, during cursor movement only. Many users will be happy to work with it in 'Quill mode'; it is fast enough this way.

Perfection is not designed to cope with size changes on-screen, but the Strip functions can be used to mark areas which are to be printed in different founts. The program will not know anything about the sizes of *your* founts and you will have to do your own calculations and use the ENTER key to shorten lines, or make trial prints, to ensure that line lengths and margins are correct.

Images can be inserted between text lines, which is a very advanced feature. The onus is on the user to get the image in the right place and of the right size. Images (of any size) saved to a file from Professional Publisher can be inserted into Perfection documents. The mechanism is to type text up to the line above where an image is required, then insert the command the program needs to see to look for a graphics file. You must leave sufficient blank lines between text to make room for the image.

Graphics insert

To get the graphics file inserted, the routine Propub Inserter must be running when the text file is printed. The printer driver encounters the code indicating a graphics file is to be inserted and automatically passes the name of the required file to the inserter program. The image is printed where the calling code and file name were entered. Once the image has been printed, control is returned to the printer driver to continue printing text.

Perfection will give printout 'out of the box', but DP provides a separate program to create or modify printer-drivers. It is easy to use, considerable effort having been expended to assist the inexperienced user in the matter of entering printer codes. This program allows entry in any of the usual formats (hex, decimal, Ascii) or a mixture of them. The entries for the supplied driver give sufficient clues as to how it is done. My problem lay in the usual area – page length. No choice of length with Perfection's <Quote page length> command would make the printer move to the tops of pages. The answer lay in inserting the codes for line spacing and lines per page in the Preamble of the printer-driver file; I've not had to do this before.

The driver creation program allows up to 16 Translate entries. This will suffice for most users but could be a minor irritant for those who use 'foreign' characters. There are also settings for four Strips, which appear as different highlight colours on-screen. Three of these can represent different printer pitches, the fourth being an 'off' switch for the others. When coming straight from Quill, there is an easy option – convert your existing Quill Printer Data-file into a Perfection Printer Data file. This is done automatically when the appropriate option is selected. You give the file name and location of the Quill file, then save it as a Perfection file. Straightforward and quite painless.

Headers and footers can be printed. To change them for opposing pages, you print all even pages first, then all odd ones (or vice-versa) as a separate run. The number of the first page can be changed (to 0 for instance); this is a global, one-time change and you cannot subsequently renumber another group of pages.

After modifying the supplied Printer_Data file to match an existing Quill file, successful printouts were made from a Kaga-Taxan 9-pin DMP and Epson GQ-5000 laser printer (in FX80-emulation mode). Trouble was experienced printing images, and it was associated with the code string &27, &73, &1 (decimal) in the Printer data Preamble. It is suggested you don't use this.

A macro can be called from a file when the program is started up, and another can be called from a memory buffer when the program is running. This is an appropriate way of entering prepared text into a document. The required text must be present in the document, or in a file. You can mark a text block and copy it into the macro buffer, or load a text file into the buffer. The text can be inserted from the buffer into the document, at the current cursor position.

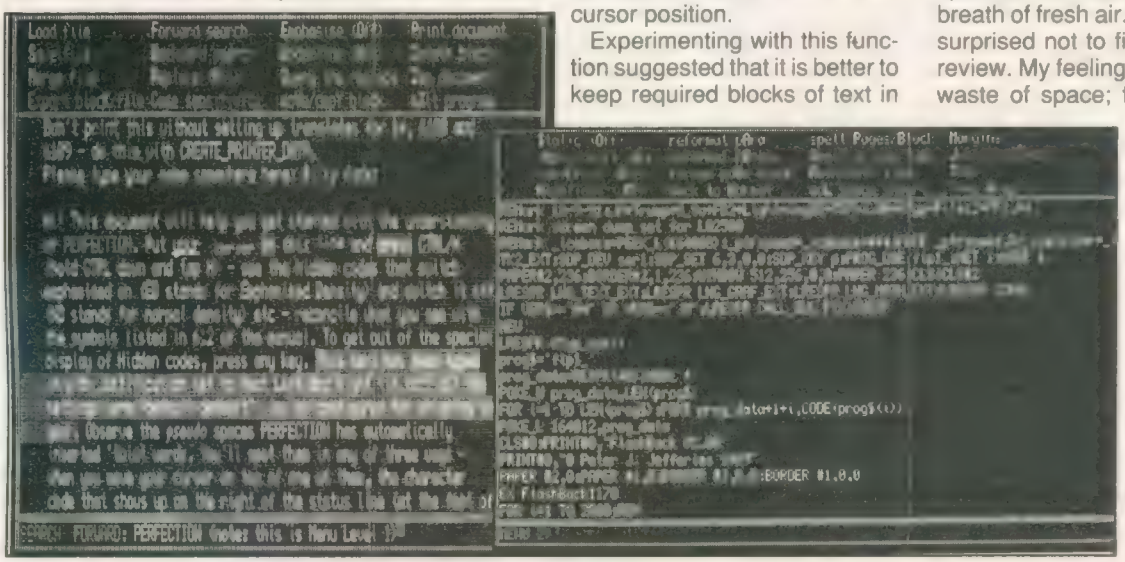
Experimenting with this function suggested that it is better to keep required blocks of text in files and use the Load or Merge commands. The macro operation did not always position text where it was required, nor did it always produce all the text from the buffer. It was also slower than loading a file containing the same text. The function needs developing.

Stripsort removes or changes codes and (optionally) sorts lines into sequence. To make Saved or Exported files compatible with other programs, codes for page breaks and end of paragraph can be changed to line feeds. Typestyle attribute codes and 'pseudo spaces' (which Perfection inserts to justify lines) can be removed. If you know what codes the target program uses for functions such as underlining, you can translate the Perfection equivalents into the required ones or exchange them for text strings which can be used as bases for search-and-replace operations in the target program.

Much faster

While you might, initially, load Quill files for the purpose of converting them to Perfection format, you would thereafter be creating files in Perfection and would benefit by having *all* operations performed substantially faster. As a rough guide, if you create a substantial document in Perfection which is equivalent – in terms of how it will print out – to one created in Quill, and you use the Very Lazy screen feature, the speed of navigation and block commands (eg Copy) should be about four to seven times greater. File loading and saving will be faster too. A *Gold Card* increases speed by a further three to five times.

As a user who doesn't touch Quill unless forced to, there was never any need to convince me to buy a program to replace it. *The Editor* was the first such program, and *text* was the next. Both caused a fair number of headaches, but were worth the effort. Those who are still using Quill, but are suffering from doing so, should give serious thought to buying Perfection; the speed and flexibility would come as a breath of fresh air. Some readers may be surprised not to find benchmarks in this review. My feeling is that they would be a waste of space; the programs is *much* faster than one it is designed to replace. It is also better in nearly all other respects. The intention is to add several features in future upgrades of Perfection, so the buyer now can have confidence that the program will become steadily more satisfactory as time goes by. Starting from the high, basic specification of the first release, you can't go far wrong.



QLW/ QLAW

Questionaire Update

Dr. Sohail Bhatti reports that the QLAW questionaire has now exceeded expertations and the analysis is proceeding.

According to Chaos Theory, the flap of a butterfly's wing in the Amazon can, through a series of random but interdependent events, lead to a typhoon in the South China seas. In the same way small but significant events have led to the creation of QLAW and its questionnaire. Since last writing there has been a slow but steady stream of responses with around 10% of all QL users now having taken the time and trouble to fill and send it, in all of its guises. I had expected that there would be a flurry of activity following publication but to my surprise there were around six to twelve replies per day over some months. Perhaps it would be more helpful if the background of the questionnaire is explained.

Plug-ins

It all, began at the end of 1990. I had been aware for a number of years that there were people working on various plug-in enhancements. Like most such projects only a small proportion would reach completion. However, for some time no-one (except Miracle) had brought out anything new. Coincidentally, I was looking to improve my computing environment. I had a number of choices. Leaving aside all the different facilities on offer, the main problem was that I would have to purchase a (very expensive) portfolio of software to match my needs. These needs were being almost wholly met by my QL, but I foresaw that this might not always be the case.

Like many people I have access to a PC at work and, while I was impressed with the depth and quality of software available, MS–dos itself I found a difficult operating system. With the advent of Window 3, the user interface is much prettier and less threatening than the dreaded C:\ prompt of MS–DOS. Unfortunately, to run the system properly requires a hefty investment in processors, memory, mice, VGA display and monitor. Even with today's heavy discounting the outlay for hardware would easily top £1200. One reason for this is that on a PC (and to a large extent the Apple Macintosh) a hard disc is not a luxury, it is an absolute necessity. For example, around 10 Mbytes of hard disk is taken up by Windows and you also need a minimum of 2Mbytes of ram on board to make it work effectively. Much the same is true of the System 7 operating system brought out by Apple for the Macintosh. This would only be the initial outlay. I would have to pay the same amount again to get the software that makes these machines so attractive. Then, as a novice, I would have to invest hundreds of hours in learning the new operating system and also on the new programs. Of course, I could do what so many others do...borrow the software I have access to at work – but that would be stealing, wouldn't it?

There were other alternatives: the Amiga and the Atari ST. Both have QL emulators. In the case of the Amiga this is cheap but idiosyncratic. The ST does have potential but the use made of the hardware and the loss of compatibility with eprom boards, etc., is I feel not sufficient justification for the outlay required – particularly now that 3.2 Mbyte floppy drives are available to Gold Card owners. The only alternative for me, I felt, was to encourage the completion and development of QL-specific peripherals.

Having decided to stick with the QL, and not having the necessary experience and expertise, I decided that I would 'donate' the task to the user group, Quanta. Unfortunately, despite much correspondence, there was insufficient interest in mounting such a potentially large venture. This meant that the task would fall onto individuals. In an effort to identify people who would have the necessary design expertise in electronics I contacted the then Quanta membership secretary with a request that he query his database of some 2,000 members and fish out the names. While there had been an attempt to form a detailed profile on each Quanta member a few years ago, it seemed that the database was not sufficiently detailed no up-to-date. Out of this chain of events, the idea of a questionnaire was born.

Skills and goal

The initial concept was to identify people who had both hardware and/or software skills. This would allow the creation of a team working toward a common goal. It immediately became obvious that the effort involved could also be used to provide more detailed information on the 'average' QL user. Anyone still using a machine conventionally 'dead' for 4-5 years would

certainly be someone out of the ordinary. Thus the questionnaire began to grow. It is divided into four sections. The first section establishes important features on the respondent such as age, occupation, geographical location and income. It is with this information that the rest of the questionnaire will be correlated. Unfortunately, the design of the the question on occupation masked the important section asking the actual title of the job.

The next section then attempts to discover the outlay that this person has made in hardware terms. It also gives information on what roms and other QL-compatibles are in circulation and how the user has dealt with the problems of expansion and reliability. There is also a section asking how many local QL users the respondent knows. It might therefore be possible to establish whether isolated users are more or less likely to invest in their machines. Furthermore, the geographical spread might allow the creation of local support groups.

Interest group

In fact, information already examined suggests that there would sufficient numbers for a Greater Manchester interest group to be set up. Using the Quanta membership as a base, a group called QUM (Qdos Users of Manchester) has now been meeting for three months, regularly at 7pm on the third Tuesday of the month at Manchester University, St Peter's House, Precinct Centre, Oxford Road, next to the Maths Tower. I believe that there are over 150 Quanta members in the areas of Halifax and Huddersfield, Greater Manchester, Stockport and Lancashire. Further details can be obtained from the QUM secretary Mike Kenneally, 6 Barnaby Road, Poynton, Cheshire SK12 1LR.

The next section of the questionnaire attempts to gauge the interests and use of the machine by the QL user. These might be the same but if there is a need for a particular interest to be met then perhaps someone may be persuaded to write a program addressing that need. It also asks about what hardware items they would like, in order to enhance the performance of the current set-up as well as what machine they would feel would most fulfil their future needs. This is perhaps the section most likely to cause problems of bias in that it may be only people who wish to encourage the creation of a 'SuperQL' who have bothered to reply I say this because the overwhelming majority of respondents (around four-fifths) have indicated that they prefer a QL development rather than the selection of machines offered. Obviously, this represents a tremendous collective need which may be somewhat modified when specifics are mentioned. This has been brought out in many letters sent with the questionnaires where people have offered investment loans, facilities, programs and hardware designs as well as their most valuable asset, time, all to help develop a modern QL successor. This is one tangible result of the questionnaire in that it has brought into the open the desire and need for such a project. In the long time this usually requires an 'open' architecture following QDOS standards, perhaps using a 68020 processor to give a ten-fold performance improvement over the QL. Unfortunately, the patience of current users is the measure of whether such ventures will be successful or not.

Software deductions

The last section of the QLAW portion of the questionnaire establishes the familiarity people have with certain programs. The selection reflects my own particular bias, but it does give a spread of new and old programs. It also gives an indication of the average strengths and weaknesses of users as well as acting as an internal check on the previous section. I hope that with the software houses' co-operation information on the number of programs in circulation will allow me to establish what proportion of *active* users actually responded. If this is carried over both a number of popular and limited interest programs it should provide quiet an accurate figure. The last section is specific only to *QL World* and deals both with specific magazine issues as well as satisfaction with Quanta and QL Technical Review, an occasional publication of CGH Services. This will hopefully allow me to estimate how many Quanta members decided to reply through Quanta rather than QL World. This is important in that it will be affected by how often and when the person saw the questionnaire. This brings me onto how the questionnaire was disseminated.

Validation

Original validation – that is establishing whether the questionnaire is actually asking the questions it thinks it is – was carried out by circulating to local sub-groups in Chorley as well as QUM. Further copies were sent out to the dozen or so Quanta sub-groups in the UK listed in the magazine. This preliminary work was done and the 12th version accepted as the final one. Copies, were then sent to every group listed in the QL Resource Guide, published by the Seacoast Users Group in the US. This meant that eventually every user group (I hope) in Europe, USA, Australia and the UK had seen the questionnaire before any magazine published it. The response to this was minimal and questioning despite the covering letter. QL Technical Review then produced an insert with the covering letter and questionnaire. This has a circulation of over 300 and brought quite an encouraging response. Quanta were to be the next publishers but delay meant that the July issue of QL World was actually next. This was unusual in that it had the QL World-specific page but it also has the widest circulation. The following month Quanta also produced the questionnaire in the centre pages but with little covering information about the project. Relative to the 2000 members of that organisation a disappointingly small proportion have responded and this might reflect the lack of accompanying information. Then Quasar, the German group with around 1000 members also published it in English. I have not seen the issue in question and do not know how detailed the covering note if any, was. Other groups that have published the questionnaire (for which I extend my gratitude) include the QL International Review (Seacoast users Group), Quasar (Dutch users group), the Danish, Swedish, Australian, Spanish and Scottish QL Users group amongst others.

As the questionnaires began arriving I wrote to each respondent outlining future plans, giving general information, recruiting 'experts' and requesting follow-up information. The latter action was necessary because often a question would be unanswered or be unclear: a case in point was 'job title', or whether the world-processor used was *Quill* or *Turboquill+*. In about 20% of cases second letters were sent confirming membership of QLAW. If, though some administrative oversight, someone has not received a confirmatory letter then please let me know by writing to me at the usual address: **4 Wasdale Avenue, Park View, Blackburn BB1 1D.** Fortunately, the number of people who have withheld their names and addresses has been small. I would urge anyone thinking of doing so to please enter the town or post code they reside at to at least give an idea of their geographical location. I would also like to urge those who have still not sent in their questionnaire to please think again and fill it in now! You can always get further copies from either myself at the above address or by writing to the Editor at QL World, enclosing a stamped addressed envelope.

Six per hour

I hope that this has given you some idea of the time and effort involved in putting this project together and also its humble beginnings. There is no doubt that without the support of the many others who have joined in with enthusiasm this project would have floundered long ago. At this moment in time around one quarter of the database has been entered into the computer (at a rate of six questionnaires per hour). Already the butterfly's wings have caused a considerable commotion in the atmosphere. Knowing about developments QLAW is encouraging, I can tell you that the typhoon is yet to come. Watch this space.

ABACAS CASH PLAN

Predict you future cash flow with Peter Tomlin's simple Abacus routine.

Increasing expenses are eating into everybody's pay-cheque. It can often be a difficulty to see how to make ends meet. The Cash Flow Chart helps you see into the future in respect of how your financial standing will be in the weeks or months to come in the year ahead.

This program for *Abacus* is very easy to set up and use and can be useful in making such difficult decisions as to how much might be allowed for that holiday this year or, alternatively, when belts should be tightened. Weekly balances reflect the position of one's bank balance at weekends.

I run two fanfold pages at a time stretching ahead about six months. The program can be updated and lengthened easily. One should have access to data from the previous year in order not to miss out regular charges and income, as and when they become due. Most people will possess this data.

Variable items like Groceries, Gas, Electricity, Phonebills, etc. will have to be estimated. Texts which recur, such as "Groceries", can be entered by typing the cell reference of their first entry into the new cells.

The line of plus-signs against each balance draws the eye to the good and bad weeks when printed out. As an example, it is obvious from **Figure one** that in week ending 12 Jan one might be tempted, in view of the larger balance seen there, to overspend or to tuck a little money away on deposit, so leading one to go overdrawn on the weekend of the 09 Feb. Using the Chart forewarns this.

Asterisks or colons can be used, instead of plus-signs, of course. It is a matter of preference, but when printing, however, it must be borne in mind that the range offered by Abacus in the command line might be a column short, as it reads only to the column in which the string of characters start and not the column in which it finishes. With regard to Figure one, for instance, the range suggested by Abacus for printing here would be A1:E32, whereas A1:F32 was actually required, the end of the longest string being in column F.

Functions

The functions, as set out in **Figure two**, need only the briefest explanation, as they are all contained in the *User Guide*. The print code in cell A1 is for condensed printing, suitable for printing onto Filofax-style pages. If your Printer can handle Abacus output, it will handle this.

The "rept" functions in column E divide the figure in column B by 100, in order to obtain a manageable string of plus signs arising in column E.

	A	B	C	D	E	F
1						
2	(in hand 01/01/91)	£1087.57				
3	Groceries	£-25.00				
4		-------		Saturday		
5		£1062.57		05 Jan ++++++++++		
6	Pay-Cheque	£1204.90				
7	Mortgage	£-350.00				
8	Cash	£-100.00				
9	Groceries	£-25.00				
10	Electricity	£-60.00				
11		-------				
12		£1732.47		12 Jan ++++++++++++++++		
13	Groceries	£-27.00				
14	Phone	£-45.00				
15	Insurance Prems	£-582.00				
16		-------				
17		£1078.47		19 Jan ++++++++++		
18	Ser Chg & Grnd Rent	£-312.00				
19	Groceries	£-30.00				
20		-------				
21		£736.47		26 Jan +++++++		
22	Groceries	£-27.00				
23	Cash	£-100.00				
24	Club Subscr	£-380.00				
25		-------				
26		£229.47		09 Feb ++		
27	Pay-cheque	£1204.90				
28	Mortgage	£-350.00				
29	Groceries	£-27.00				
30	TV Licence	£-66.00				
31		-------				
32		£991.37		16 Feb +++++++++		

Fig. 1 The Program in operation.

	A	B	C	D	E	F
1	chr(0)+chr(15)					
2	(in hand 01/01/91)					
3	Groceries					
4		-------				
5		sum(B2:B4)			rept("+",B5/100)	
6	Pay-Cheque					
7	Mortgage					
8	Cash					
9	Groceries					
10	Electricity					
11		-------				
12		sum(B5:B11)			rept("+",B12/100)	
13	Groceries					
14	Phone					
15	Insurance Prems					
16		-------				
17		sum(B12:B16)			rept("+",B17/100)	
18	Ser Chg & Grnd Rent					
19	Groceries					
20		-------				
21		sum(B17:B20)			rept("+",B21/100)	
22	Groceries					
23	Cash					
24	Club Subscr					
25		-------				
26		sum(B21:B25)			rept("+",B26/100)	
27	Pay-cheque					
28	Mortgage					
29	Groceries					
30	TV Licence					
31		-------				
32		sum(B26:B31)			rept("+",B32/100)	

Fig. 1 The Functions

cated to *PC Conqueror*, to run MS-DOS.

As far as the backup program could see, this whole area of storage was just one file, and it asked for another disk to put it on. Not surprisingly, I didn't have a 15 MB floppy to hand (disks of around this size are said to be available for about £30, but not from my local shop!), which meant that the backup had to be aborted by resetting the QL, but that didn't affect the files already backed up.

This problem can't be sidestepped by specifying the MS-DOS partition as a sub-directory that should not be backed up, since the whole partition is treated as just one file, not a sub-directory. If all "normal" files come before it on the disk, there will not be a problem backing them up, but any that come after it can't be processed. The effect is basically the same if a normal QDOS file is larger than 717 KB, which is possible when you use hard disk as the 'save' medium for a word-processing program, for example.

Many users will not have had occasion to read-up on the details of archiving and date-stamping files. Fortunately, the instructions deal with some of the important points. The screen which shows the progress of a backup displays FILE LAST UPDATED and FILE LAST ARCHIVED. The former is followed by the date on which the current file was last modified, and the date is taken from the system clock at the time of modification of the file; if you failed to set the system clock correctly, the date will be incorrect. *WinBack* is not to know whether or not you bother to set the clock each time you start the QL. It has to assume the date it finds is correct.

The ARCHIVED date is the date on which a file was last backed by the WinBack. This date also will be wrong if you failed to set the clock before doing the backup. It is quite possible that the update date will show as later than the archive date when the reverse is true, if you have failed to set the clock at the appropriate times. You could find all files being backed up every time, even though none actually need it. **Make sure you set the QL clock – every time!**

In general, users are likely to be satisfied with the program's decision to back up only those files which have been updated since the last backup. Hopefully, future developments of the program will give the user more freedom to choose, such as allowing *any* files to be specified for backup, regardless of when they were last backed up. It is also desirable to be able to specify groups of files; as it stands, program files are backed up as well as data ones and the user may wish to keep these two categories separate from each other. (You may keep them in separate sub-directories, however, in which case there should be no problem.)

When the time comes to copy a file back to the hard disk, you may appreciate having made a printout during the backup, because it can be rather a pain to have to insert disk after disk and do DIRs simply to find out which disk an odd file is on. As the files are not compressed, or otherwise tampered with, the COPY or WCOPY commands will retrieve the required file(s) without bother.

If I seem not to have said much about this program, that should be taken as a compliment to it. If does what it sets out to do, and the user does not have to be particularly smart to use it. The price is reasonable. The instructions are clearly-printed (no bother with printing-out a _DOC file, other than any UPDATES_DOC) and user-friendly. The type and manner of the backup will be quite satisfactory for most users. Future developments should cater better for the more-demanding user, but the program in its present form should, at the least, ensure that the big disasters (often) associated with hard disk usage are avoided. As mentioned in the instructions, it is not a question of *whether* you will have file problems – just *when*. Most times, you will have created the problem yourself (which is no consolation). It is most reassuring to know you have a spare, up-to-date, set of files ready for copying back onto the hard disk.

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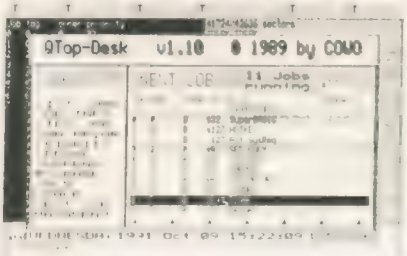

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DBQL

In part 5, Tom Ashcroft begins to customise this database.

So far, the procedures of *DBQL* have been intended to be used with any database in an interactive way, but it is often useful to adapt the database program to the needs of a particular file, say by the use of special screen layouts for entering data or for display purposes. Taking this approach a step further, database users often write a program which takes over all the running of the database and presents the user with its own screens and menus so that the person at the keyboard can use the files without any knowledge of what is happening inside.

Many commercial packages, for example *Archive* or the *dBase* series, have their own programming language for this purpose built into the database package, and programs written in the Archive language have been published from time to time in Sinclair QL World. These 'house' languages are usually interpretative, like SuperBasic, that is, they have an interpreter program which takes the commands of the user program one by one as it runs and translates them into the machine code instructions required by the microprocessor. Some companies have marketed compilers for use with the more popular packages such as the dBase series, partly for speed of execution and partly for copyright reasons. Users of DBQL already have a powerful programming language, Superbasic, at their disposal and compilers are also available.

To exploit these possibilities it is necessary to have some knowledge of Superbasic programming but there is no need to be an 'expert' and readers who have followed this series in detail so far should certainly have a go. This article can only give examples of what might be done as each application has its own requirements.

The key to automating or customising DBQL files is the use of the SuperBasic MERGE and MRUN commands, which enable new procedures to be added to the basic DBQL code, either replacing existing procedures or in addition to the original code. One useful addition is a menu driver program to enable the procedures to be called by a single key_press instead of an INPUT. It also makes it possible to compile DBQL with *QLiberator* or *Turbo*, as compiled versions of the procedures could not be called from the keyboard as at present. Special entry or display screens can be written as separate procedures and merged into DBQL when required. As an example of a multiple relational database application which can use these techniques, let's imagine you have been asked by the Secretary of your local camera club to show how he can use his QL computer to run the club membership and competition records.

By way of background information, a typical Camera Club, in addition to lectures, demonstrations etc., usually organises several competitions in which members enter their own photographs, either colour transparencies or colour or black and white prints. These are criticised by a visiting judge who awards points to each picture. Several print and slide competitions are held and at the end of the season, the members gaining the most points over the year in various categories are awarded trophies, to be kept for a year.

In order to use a QL computer to keep records and work out scores two files would be required, as shown in **listing one**, one to hold information on members and the other on photographs. The members' file (member dbf) might use 12

Listing 1.

	Member_dbf	Photos_dbf
1.	Title	Title
2.	Forename	Type
3.	Surname	Competn
4.	Address1	Points
5.	Address2	Membrnum
6.	Address3	
7.	Postcode	
8.	Phone	
9.	Datejoin	
10.	Membrnum	
11.	Printpts	
12.	Slidepts	

Listing 2.

```
100 start
110 af$="member dbf":lload
120 use 2
130 bf$="photos_dbf":lload
140 BORDER 1,7
150 REPeat menu2
160 CLS:CLS#4:AT 1,32:PRINT"Camera Club":PRINT
170 PRINT\TO 27;"1. Enter new member"
180 PRINT\TO 27;"2. Enter new pictures"
190 PRINT\TO 27;"3. Competition results"
200 PRINT\TO 27;"4. Update scores"
210 PRINT\TO 27;"5. Competition placings"
220 PRINT\TO 27;"6. Set or Cancel Printer"
230 PRINT\TO 27;"7. Exit to DBQL"
240 IF lprint THEN PRINT\TO 27;:PAPER 7:INK 0:PRINT" Is the printer
ready? ":PAPER 0:INK 7
250 REPeat check
260 com$=INKEY$(-1)
270 IF com$ INSTR "1234567" THEN EXIT check
280 END REPeat check
290 com=com$
300 SELect ON com
310   =1:use 1:en
320   =2:use 2:en
330   =3:printout_comp
340   =4:update_score
350   =5:comp_place
360   =6:lprint=1-lprint: next menu2
370   =7:EXIT menu2
380 END SELect
390 AT 19,25:PRINT "Press any key to continue":PAUSE
400 END REPeat menu2
410 CLS:menu
420 STOP
1000 :
1130 :
```

'prints 1' or 'portraits' etc is requested in 8330 and a repeat loop, printout, is entered. Line 8360 prints a row of column headings and 8370 initialises a counter variable, count.

Photos_dbf is held in b$ which has been indexed on field 4 (points) so that bndx$ holds the points scores, sorted in ascending order, and the corresponding record number for each score. Although the entries in all of the competitions are mixed together, any one competition can be regarded as a subset of the whole file and its entries will also be arranged in ascending score order.

To find the entries in one competition, the program has to page through bndx$, starting at bnn, the highest score, and working back to 1. This is done by the FOR. . . NEXT LOOP starting at 8380. Line 8390 sets the current photos record, bc, equal to the record number stored in bndx$ and checks b$(3), the competition name of this record, against the specified name in competn$. If they do not match the program moves to 8470 and the next record but if a match is found then lines 8410 to 8450 are executed. Line 8410 sets s$ equal to the membership number of the entrant (field 5 of b$) and this is used in a binary search of the membrnum field of the member_dbf file, which is indexed in the first section of andx$, by calling the bin_s function in 8420. This returns the appropriate record number in a$ and the member_dbf record pointer, ac, is set equal to this. Then 8440 prints the counter, count; the title of the picture, b$ (bc,1); the points scored, b$ (bc,4); the author's initial, a$ (ac, 2,1) and the author's surname, a$ (ac,3). Output goes to screen or printer according to the value of chan, switched by 8480 as in the standard DISPLAY procedure. Finally, the counter is incremented in 8450 and the loop moves on to the next picture.

After results of a new competition have been entered in photos_dbf, the cumulative points scores of the members will have to be updated and this is done by UPDATE_SCORE **(listing five).** First of all, the printpts and slidepts fields of all the members are set to zero by the loop in 8620. The procedure will then take each picture in turn, find the record of its owner in a$ and add the picture's points score to the appropriate. . . pts field in the member's record. The FOR. . . NEXT loop starting in 8630 takes each record in b$ in turn, sets s$ equal to the membership number of the entrant and calls bin_s to carry out a binary search in andx$(1), the membrnum index of a$. The member_dbf record pointer, ac, is set equal to the record number in 8660 and then lines 8670 and 8680 add the picture's points score, b$ (j,4), to printpts, a$ (ac,11), or slidepts, a$ (ac,12), according to whether the first letter of the picture type field, b$ (2), is p for print or s for slide. When all the pictures have been checked the procedure calls PAck with alias =1 to reindex the points fields and, incidentally, the membrnum field. It terminates with a screen message.

The third new procedure, COMP_PLACE **(Listing six),** displays the first, second, and third prize winners, with cumulative points scores, for print and slide competitions. This has been written as a separate call from the menu but it could appropriately be called at the end of UPDATE_SCORE. Output can be directed to screen or printer as before. Lines 8820 and 8830 print headings and a loop starting at 8840 is entered. This first of all examines the last entry in the printpts index file to identify the member with the highest cumulative printpts score and prints out the initial, surname and score. It repeats this for the slidepts index file. It then repeats the processes for the second and third highest scores in each category, paging downwards through the last three records of the index files. Simple print separators are used throughout as AT statements are not recognised by the printer, though PRINT TO. . . statements are.

Listings two to six should be made up into a single program and saved to cartridge or disc as, say, CAMCLUB_PRG. When DBQL has been loaded it should be started with the command MRUN mdv1_CAMCLUB_PRG, which will MERGE the new program and RUN the combined program from the beginning.

The above procedures illustrate principles that are useful in other applications. The input screen is easily adapted for a name and address file or almost any other data entry. You might feel a driver menu would be a useful permanent feature in DBQL. The program in **listing seven** uses

Listing 4.

```
8300 REMark ************************ DISPLAY COMPETITION RESULTS
8310 DEFine PROCedure printout_comp
8320 CLS
8330 INPUT\"Which competition?  ";competn$
8340 CLS:PRINT
8350 REPeat printout
8360 PRINT#chan, "       Title                  Points        Author":
PRINT #chan
8370 count=1
8380 FOR j=bnn TO 1 STEP -1
8390    bc=bndx$(1,j,2)
8400    IF b$(bc,3)==competn$ THEN
8410      s$=b$(bc,5):active=1:sfld=10
8420      s=bin_s(ann,s$,andx$)
8430      ac=andx$(1,s,2)
8440      PRINT#chan,count;". ";b$(bc,1);TO 30;b$(bc,4),a$(ac,2,1)&
 ". " &a$(ac,3)
8450      count=count+1
8460    END IF
8470 END FOR j
8480 IF lprint AND chan=1 THEN chan=3:NEXT printout
8490 chan=1:EXIT printout
8500 END REPeat printout
8510 END DEFine printout_comp
```

Listing 5.

```
8600 REMark ************************* UPDATE_SCORE
8610 DEFine PROCedure update_score
8620 FOR j=1 TO ann:a$(j,11)="0":a$(j,12)="0"
8630 FOR j=1 TO bnn
8640 s$=b$(j,5):active=1:sfld=10
8650 s=bin_s (ann,s$,andx$)
8660 ac=andx$(1,s,2)
8670 IF b$(j,3,1)=="s" THEN a$(ac,12)=a$(ac,12)+b$(j,4)
8680 IF b$(j,3,1)=="p" THEN a$(ac,11)=a$(ac,11)+b$(j,4)
8690 END FOR j
8700 use 1:wi
8710 CLS:AT 10,29:PRINT "Scores now updated"
8720 END DEFine update_score
```

Listing 6.

```
8800 REMark ****************** LIST COMPETITION PLACINGS
8810 DEFine PROCedure comp place
8820 CLS:PRINT#chan:PRINT#chan,TO 27;"COMPETITION PLACINGS"
8830 PRINT#chan:PRINT#chan:PRINT#chan,TO 5;"Print competitions (pts)";
TO 45:PRINT#chan,"Slide competitions (pts)":PRINT#chan
8840 FOR j=ann TO ann-2 STEP -1
8850 ac=andx$(2,j,2)
8860 PRINT#chan,\\ TO 5; ann-(j-1);".  ";a$(ac,2,1);". ";a$(ac,3),
andx$(2,j,1);
8870 ac=andx$(3,j,2)
8880 PRINT#chan, TO 45;ann-(j-1);".  "; a$(ac,2,1);". ";a$(ac,3),
andx$(3,j,1)
8890 END FOR j
8900 IF lprint AND chan=1 THEN chan=3:comp_place
8910 chan=1
8920 END DEFine comp_place
```

the standard DBQL menu but the procedures are called by keying only the first letter of the name. Some procedures have been renamed to ensure that each starts with a different letter of the alphabet. DESelect has been changed to Reset, PAck has become Wipe and LIst has become View. Only the names have been changed and the code remains the same, but the names in the menu string in 1180 should be changed to suit. The program should be MERGED with DBQL and, of course, can be used equally well with the flat_file version of DBQL.

After initialisation by START, the screen is cleared and the main loop, menu2, begins by printing the MENU. The nested loop, check, waits for a keypress and checks com$ against a string made up of the initial letters of all the procedures. When a valid character has been obtained a series of IF. . . THEN statements calls the appropriate procedure. A SELect structure cannot be used as Superbasic does not SELect on strings. Note that G and U (se) expect a number to be passed and this is requested in 240 and 330 respectively. The advantage of this type of input is that non-character keys can be brought into use, for example, the up and down arrow keys can be used instead of N or B to move between records and the Function keys could be used to call some procedures. All these keys return a character string (see *Sinclair QL User Guide*, Concepts pp 5-9) which can be tested for in 160 by adding the following to the check string &CHR$(y). . . They can be executed by a statement such as IF com$-CHR$ (208) THEN. . . for an up arrow. The only disadvantage is that access is lost to useful Superbasic commands such as DIR or COPY but special procedures can be written to use such commands in response to, say, one of the Function keys.

Listing 7.

```
100 start
110 CLS:CLS#0
120 REPeat menu2
130   menu
140   REPeat check
150     com$=INKEY$(-1)
160     IF com$INSTR"abcdefgilmnopqrsuvw" THEN EXIT check
170   END REPeat check
180   IF com$=="a" THEN am
190   IF com$=="b" THEN b
200   IF com$=="c" THEN cr
210   IF com$=="d" THEN del
220   IF com$=="e" THEN en
230   IF com$=="f" THEN fi
240   IF com$=="g" THEN INPUT\" Number? ";x:g x
250   IF com$=="i" THEN in
260   IF com$=="l" THEN lo
270   IF com$=="m" THEN mo
280   IF com$=="n" THEN n
290   IF com$=="o" THEN op
300   IF com$=="p" THEN pr
310   IF com$=="q" THEN quit:EXIT men2
320   IF com$=="r" THEN des
330   IF com$=="s" THEN se
340   IF com$=="u" THEN INPUT\" Number? ";x:use x
350   IF com$=="v" THEN li
360   IF com$="w" THEN pa
370 END REPeat menu2
380 STOP
1000 :
1130 :
```

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SPAIN

Systemati
Machine Code
Programm

Part 2 of our new series by Alan Bridewell

In the first article in this series, we introduced a set of small code chunks, designed to perform simple, obvious functions. The idea is that it should be clear what they do, how they do it, and more important, how they might need to be modified when joined together to make programs. To this end, each chunk is comprehensively annotated.

In this article we shall put together a simple, though useful, multitasking program, using the chunks of code produced last time.

This program will transfer bytes from one channel to another. The input channel would normally be a file on disk or microdrive, and the output channel could be a screen window, or a printer, or another disk or microdrive file. In other words, the program will copy a file to another file, or to the screen so we can view it, or to a printer to get a hard copy. And this can happen while your QL is being used for something else! The best use is in outputting to a printer, which is always a long job because printers are far slower than computers, and while the printer is working, the computer has lots of time to get on with other things.

First of all, we need to draft out the steps the program needs to go through to accomplish its task. (Professionals would probably do this as a flow chart, but I shall simply write a list of statements).

1. We need the standard way of starting a multitasking job. We start with JOBSTART.

2. We need to set the priority of the job, so next use PRIORITY.

3. We need to open a console window to input the channel names, so we use CONSOLE.

4. We need to print a prompt to the screen to ask for an input channel name, so we use MESSAGE.

5. The channel name will come as a string from the keyboard, so we store it in a buffer using INSTRING.

6. Having collected the channel name, we need to open a channel using OPEN.

7. We will now need to repeat steps 4, 5 and 6 to get an output channel, so we use MESSAGE, INSTRING, and OPEN again.

8. We are going to use some spare ram in the common heap as a buffer for the bytes in order to reduce to a minimum the number of times we access microdrives (or disks), so we use GETHEAP.

9. Now we can do the actual file transfer using STRINGTR.

10. Having completed the transfer, we need to tidy up by closing the two channels and the console window using CLOSE three times.

11. Finally, we kill the job using ENDJOB.

Putting all that together, what we have to do is merge the routines in this order:

JOBSTART, PRIORITY, CONSOLE, MESSAGE, INSTRING, OPEN, MESSAGE, INSTRING, OPEN, GETHEAP, STRINGTR, CLOSE, CLOSE, CLOSE, ENDJOB.

This then leaves us with the job of making all the little changes needed to join the

Listing 1

```
; ***************************************************************************
;                              'JOBSTART'
;
                    BRA.S     START       ; BRANCH TO START OF CODE
                    DC.L      0           ; (THIS IS STANDARD FORMAT FOR
                    DC.W      $4AFB       ; START OF A JOB)
;  ---- ALTER CHARACTER COUNT AND JOB NAME ----
                    DC.W      8           ; CHARACTER COUNT OF JOB NAME
                    DC.B      'TRANSFER'  ; NAME OF JOB
;
; ***************************************************************************
;                              'PRIORITY'
;
; ---- ALTER LABEL TO .START ----
.START              MOVEQ     #$B,D0                ; MT_PRIOR IN D0
                    MOVEQ     #-1,D1                ; OF THIS JOB
                    MOVEQ     #1,D2                 ; TO 1
                    TRAP      #1
;
; ***************************************************************************
;                              'CONSOLE'
;
; OPEN THE CONSOLE CHANNEL
;
                    LEA.L     PBLOCK,A1             ; PBLOCK ADDRESS IN A1
                    MOVEA.W   $C6,A2                ; UT_CON VECTOR IN A2
                    JSR       (A2)
;
; SAVE THE CHANNEL ID WHICH UT_CON ROUTINE LEAVES IN A0.
;
                    MOVE.L    A0,-(A7)              ; SAVE CONSOLE ID ON STACK
;
; CLEAR THE WINDOW
;
                    MOVE.W    #$FFFF,D3             ; INFINITE TIMEOUT
                    MOVEQ     #$20,D0               ; #SD_CLEAR IN D0
                    TRAP      #3
; ---- ALTER BRANCH ADDRESS TO MESS1 ----
                    BRA.S     MESS1                 ; SKIP BLOCK
;
;DEFINITION BLOCK.
;
; ---- ALTER BLOCK TO GIVE REQUIRED WINDOW ----
.PBLOCK             DC.B      2                     ; RED BORDER
                    DC.B      2                     ; 2 PIXELS WIDE
                    DC.B      0                     ; BLACK PAPER/STRIP
                    DC.B      4                     ; GREEN INK
                    DC.W      400                   ; WIDTH
                    DC.W      24                    ; HEIGHT
                    DC.W      50                    ; X POSITION
                    DC.W      0                     ; Y POSITION
```

c ing

chunks together into a coherent (and, we hope, working) program. Basically, this involves doing the following:

1. Move buffers, etc. to the end of the program, and delete any which have been unnecessarily duplicated.
2. Where chunks are repeated, we must alter some labels to ensure they are unique.
3. Adjust the window data block to give us the window we want.
4. Adjust the two message strings to give the prompts we want.
5. Each time we access data from the stack, check carefully the stack pointer to see if we need (A7) ,A0 or 4(A7) ,A0 ...etc. and alter the code accordingly. (This is probably the part where mistakes are most likely to occur, and needs to be done very carefully.)
6. Remove all unwanted comments and annotation, and put in ones we actually want for this program.

One way of doing this (assuming you have a printer) is by having a printout of the merged chunks of code, and then making alterations to this by hand, before altering the actual program. Alternatively, you can alter each chunk as it is merged into your listing file. **Listing one** shows the results of this work, but with two differences. In order to show how the final listing relates to the merged chunks of code, it contains the following:

1. Rows of asterisks left between each chunk.
2. Additional comments added to show where the code needs to be changed. These comments start and end with "——".

Both of these can be left out of your own final listing. If you make mistakes or omissions in these alterations, most of them will be picked up by the assembler and rejected. The error message will then tell you what to put right. The biggest problem is in moving the channel ID from the stack into A0. If you make a mistake here, the assembler will not spot it, and the program will run using the wrong channel ID. This will probably result in it doing nothing – not very informative. Watch out for this one.

Although it may be fairly self-evident from listing one, we will go through the steps needed to be carried out if we were going to merge the chunks and alter them as we merge them. We can leave out any instructions regarding the deletion of unwanted remarks. That is basically a "tidy up the listing" job, and does not affect the code.

1. Merge 'Jobstart' into the file. Alter character count and job name. (This is methodical, but not essential. We can call the job anything we like.)
2. Merge 'Priority' into the file. Alter the label to '.START', because it's the start of the code proper.
3. Merge 'Console' into the file. Alter the window definition block to the required size. The parameters I have put in listing one give two rows of the width of the screen, with a red border, and green text on a black background. Change them if you prefer something different. Also, when we skip over the definition block, we go to 'Message', which occurs twice in the program, they need unique labels, so alter the branch address to 'MESS1'.
4. Merge 'Message' into the file. Alter the label to '.MESS1', the load address to 'MESSAGE1', and the label of the message itself to '.MESSAGE1'. The actual character count and message need altering to something appropriate. I've called it 'PRINT FILE: ', but you can call it what you like. We need to skip over the message, and the next bit is 'Instring', but as it occurs twice, we can alter the branch address to 'STRING1'.
5. Merge 'Instring' into the file. Alter the label to '.STRING1'. The buffer block needs to be at the end of the code, so position the cursor so that subsequent chunks merge above the buffer block.
6. Merge 'Open' into the file. As this will occur twice, we need unique labels. So alter the first branch address to 'GOTFILE1' and the corresponding label to '.GOTFILE1'. Also, in the case of error, we want to go back to the first prompt, so alter that branch address to 'MESS1'.

At this point, we start to repeat ourselves as we try to open an output channel.

7. Merge 'Message' into the file. Alter the label to '.MESS2', the load address to 'MESSAGE2', the actual message label to '.MESSAGE2', and the branch address to skip over the message to 'STRING2'. The message itself needs to be changed to something appropriate. I've called it 'PRINTER DEVICE: '. Here we come to the first stack problem. As we have opened a second channel, the console ID is no longer on the top of the stack, but four bytes away. So the MOVE.L command must be altered to 4(A7) ,A0.
8. Merge 'Instring' into the file. Alter its

```
;
; ************************************************************************
;                              'MESSAGE'
;
; ---- ALTER LABEL TO .MESS1 ----
; ---- ALTER LOAD ADDRESS TO MESSAGE1 ----
.MESS1          LEA.L     MESSAGE1,A1 ; BASE ADDRESS IN A1
                MOVE.W    #D0,A2      ; UT_MTEXT VECTOR IN A2
                JSR       (A2)
; ---- ALTER BRANCH ADDRESS TO STRING1 ----
                BRA.S     STRING1     ; SKIP MESSAGE
;
; ---- ALTER LABEL TO .MESSAGE1 ----
; ---- ALTER CHARACTER COUNT AND MESSAGE ----
.MESSAGE1       DC.W      12          ; LENGTH OF MESSAGE
                DC.B      'PRINT FILE: '
;
; ************************************************************************
;                              'INSTRING'
;
; ---- ALTER LABEL TO .STRING1 ----
.STRING1        MOVE.L    (A7),A0     ; CONSOLE CHANNEL ID IN A0
                MOVEQ     #BUF_LEN,D2 ; LENGTH OF BUFFER IN D2
                MOVE.W    #$FFFF,D3   ; INFINITE TIMEOUT
                LEA.L     BUFFER,A1   ; BASE ADDRESS OF BUFFER IN A1
                MOVEQ     #$2,D0      ; #IO_FLINE IN D0
                TRAP      #3
                LEA.L     BUF_POS,A0  ; BUF_POS IN A0
                SUBQ.L    #1,D1       ; SUBTRACT 1 FROM THE D1 REMOVES
                                      ; THE LF FROM THE STRING COUNT.
                MOVE.W    D1,(A0)     ; PUT NEW STRING LENGTH IN BUF_POS
;
; ---- BUFFER, ETC MOVED TO BOTTOM OF CODE ----
; ************************************************************************
;                              'OPEN'
;
                LEA.L     BUF_POS,A0  ; BUF_POS IN A0
                MOVEQ     #1,D3       ; OPEN OLD SHARED FILE
                MOVEQ     #-1,D1      ; JOB ID FOR THIS JOB
                MOVEQ     #$1,D0      ; #IO_OPEN IN D0
                TRAP      #2
                TST.L     D0          ; ERROR?
; ---- ALTER BRANCH ADDRESS TO GOTFILE1 ----
                BEQ.S     GOTFILE1    ; IF NOT, THEN CONTINUE. ELSE:-
;
; PRINT ERROR MESSAGE
;
                MOVE.L    (A7),A0     ; CONSOLE CHANNEL ID IN A0
                MOVE.W    #CC,A2      ; UT_ERR IN A2
                JSR       (A2)        ; PRINT ERROR MESSAGE
;
; GO BACK TO SCREEN PROMPT FOR INPUT
```

label to'.STRING2' and because the console channel ID is four bytes away from the top of the stack, we need to alter the MOVE.L command to 4(A7) ,A0. The buffer, etc. was already included the first time we used 'Instring', so this time it can be deleted.

9. Merge 'Open' into the file. To distinguish this from the first time we used 'Open', alter the first branch address to 'GOTFILE2' and the corresponding label to '.GOTFILE2'. In the case of error, we want to go back to the second prompt, so alter that branch address to 'MESS2'. The other difference from the first 'Open' is the type of file. Whether we output to a printer, screen, or magnetic medium, we will be using a new file, and it must be for the exclusive use of this program (at least while it is running). So the first MOVEQ command must be altered to #2,D3.

10. Merge 'Getheap' into the file. Alter the branch address for skipping over the heap allocation block to 'FILE_P'. I have the program allocating (or trying to allocate) 4096 bytes of heap space. You can increase or decrease this, depending on your available ram, how many jobs you think will multitask together, and the length of file you might wish to copy.

11. Merge 'Stringtr' into the file. As the last channel opened was to the output file, the input channel ID is four bytes from the top of the stack. So alter the first MOVE.L command to 4(A7) ,A0. The next few lines need to be changed to the alternatives in the comment field, because we are using common heap space as a buffer, rather than the buffer at the end of the code. So, delete the two lines

```
MOVEQ       #BUF_LEN,D2
LEA.L BUFFER,A1
```

and replace them with the lines

```
LEA.L HEAP_LENGTH,A1
MOVE.L      (A1) ,D2
LEA.L HEAP_ADDR,A1
MOVE.L      (A1) ,A1
```

We need a similar change to deal with the output file. So delete the line

```
LEA.L BUFFER,A1
```

and replace with the lines

```
LEA.L HEAP_ADDR
MOVE.L      (A1) ,A1
```

12. Merge three copies of 'Close' into the file. This is to close the output and input channels, and the console window. Alter the labels on the three copies to '.CLOSE1', '.CLOSE2' and '.CLOSE3'. On the first two copies, delete the BRA.S END_JOB line.

13. Merge 'Endjob' into the file.

14. Make sure the buffer block is at the end of the code.

```
;
; ---- ALTER BRANCH ADDRESS TO MESS1 ----
                    BRA.S     MESS1      ; LOOP BACK TO MESS1
;
; IF NO ERROR, THEN THIS CODE IS USED
;
; ---- ALTER LABEL TO .GOTFILE1 ----
.GOTFILE1           MOVE.L    A0,-(A7)   ; SAVE CHANNEL ID ON STACK
;
; ************************************************************************
;                             'MESSAGE'
;
; ---- ALTER LABEL TO .MESS2 ----
; ---- ALTER MOVE.L COMMAND TO 4(A7),A0 ----
.MESS2              MOVE.L    4(A7),A0   ; CHANNEL ID IN A0
; ---- ALTER LOAD ADDRESS TO MESSAGE2 ----
                    LEA.L     MESSAGE2,A1 ; BASE ADDRESS IN A1
                    MOVE.W    #D0,A2     ; UT_MTEXT VECTOR IN A2
                    JSR       (A2)
; ---- ALTER BRANCH ADDRESS TO STRING2 ----
                    BRA.S     STRING2    ; SKIP MESSAGE
;
; ---- ALTER LABEL TO .MESSAGE2 ----

; ---- ALTER CHARACTER COUNT AND MESSAGE ----
.MESSAGE2           DC.W      16         ; LENGTH OF MESSAGE
                    DC.B      'PRINTER DEVICE: '
;
; ************************************************************************
;                             'INSTRING'
;
; ---- ALTER LABEL TO .STRING2 ----
; ---- ALTER MOVE.L COMMAND TO 4(A7),A0 ----
.STRING2            MOVE.L    4(A7),A0   ; CONSOLE CHANNEL ID IN A0
                    MOVEQ     #BUF_LEN,D2 ; LENGTH OF BUFFER IN D2
                    MOVE.W    #$FFFF,D3  ; INFINITE TIMEOUT
                    LEA.L     BUFFER,A1  ; BASE ADDRESS OF BUFFER IN A1
                    MOVEQ     #$2,D0     ; #IO_FLINE IN D0
                    TRAP      #3
                    LEA.L     BUF_POS,A0 ; BUF_POS IN A0
                    SUBQ.L    #1,D1      ; SUBTRACT 1 FROM THE D1 REMOVES
                                         ; THE LF FROM THE STRING COUNT.
                    MOVE.W    D1,(A0)    ; PUT NEW STRING LENGTH IN BUF_POS
;
; ---- BUFFER, ETC DELETED BECAUSE THEY ARE DUPLICATED ----
; ************************************************************************
;                             'OPEN'
;
                    LEA.L     BUF_POS,A0 ; BUF_POS IN A0
; ---- ALTER TO MOVEQ #2,D3 FOR NEW EXCLUSIVE FILE ----
                    MOVEQ     #2,D3      ; #2 = NEW EXCLUSIVE FILE
                    MOVEQ     #-1,D1     ; JOB ID FOR THIS JOB
                    MOVEQ     #$1,D0     ; #IO_OPEN IN D0
                    TRAP      #2
                    TST.L     D0         ; ERROR?
; ---- ALTER BRANCH ADDRESS TO GOTFILE2 ----
                    BEQ.S     GOTFILE2   ; IF NOT, THEN CONTINUE. ELSE:-
;
; PRINT ERROR MESSAGE
;
                    MOVE.L    (A7),A0    ; CONSOLE CHANNEL ID IN A0
                    MOVE.W    #CC,A2     ; UT_ERR IN A2
                    JSR       (A2)       ; PRINT ERROR MESSAGE
;
; GO BACK TO SCREEN PROMPT FOR INPUT
;
; ---- ALTER BRANCH ADDRESS TO MESS2 ----
                    BRA.S     MESS2      ; LOOP BACK TO MESS2
;
; IF NO ERROR, THEN THIS CODE IS USED
;
; ---- ALTER LABEL TO GOTFILE2 ----
.GOTFILE2           MOVE.L    A0,-(A7)   ; SAVE CHANNEL ID ON STACK
;
; ************************************************************************
;                             'GETHEAP'
;
                    MOVE.L    #HEAP_ROOM,D1 ; BYTES REQUIRED IN D1
.GET_ROOM           MOVEQ     #-1,D2     ; ID FOR THIS JOB IN D2
                    MOVEQ     #$18,D0    ; #MT_ALCHP IN D0
                    TRAP      #1         ; TRY TO GET RAM
                    TST.L     D0         ; ERROR
                    BEQ.S     GOT_AREA   ; YES, THEN CONTINUE. ELSE:-
                    LSR.L     #1,D1      ; DIVIDE BYTES REQUIRED BY 2
                    CMPI.L    #1,D1      ; IF D1<=1 STOP WITH ERROR
                    BGT.S     GET_ROOM   ; ELSE LOOP AND TRY AGAIN
                    BRA.S     JOB_END
; HAVING GOT SPACE ALLOCATED, WE MUST SAVE ADDRESS AND NUMBER OF BYTES
; ALLOCATED.
;
.GOT_AREA           LEA.L     HEAP_LENGTH,A1
                    MOVE.L    D1,(A1)    ; SAVE NUMBER OF BYTES
                    LEA.L     HEAP_ADDR,A1
                    MOVE.L    A0,(A1)    ; SAVE AREA ADDRESS
; ----  ALTER BRANCH ADDRESS TO FILE_P ----
                    BRA.S     FILE_P     ; SKIP HEAP ALLOCATION BLOCK
```

If you complete that successfully, you should have a listing which will assemble into a multitasking program. You could, of course, simply copy **listing one**. But that would completely defeat the point of the article. The program itself is nothing special. It's one of many short routines which perform more or less the same job. Many professional packages have something similar built into them. I would not even claim this as my own. As I said in the first part of this series, I taught myself originally by reading Adam Denning's *Advanced QL Machine Code*, and much of what I have learned was by taking his programs apart and using the bits. Here we have almost put one of his routines together again.

There are two points to this. One is that it well illustrates the process, where prepared chunks of code can be turned into a program. The other is that this program contains elements that nearly all programs will need to have to get started; how we start a job, open console channels, input and output strings, open and close files, transfer data, and finally kill jobs. This means that in the rest of this series, whatever the particular point we are trying to illustrate, we can write it into a program that will work.

As I pointed out in the first article, this series is not intended as a beginner's tutorial in assembler language programming. If you don't already know a little of it (enough to be able to READ a listing and understand the individual program lines, even if you cannot WRITE a program), then clearly you will need a suitable guide before this series of articles makes much sense to you.

Copying listings, or even following a list of instructions, successfully does not mean that you understand what you are doing. But if you put these instructions into practice, by now you should begin to understand what is going on. A good way to test this, and to practice using this machine code toolkit (as I like to think of it) is to try rewriting the program to do something slightly different. Here are some suggestions.

1. To start with, simply change the parameters of the console window.

2. Open another console window so that the input file is automatically copied to the screen as well as the selected output device.

3. Write a program so that when its cursor is flashing, all keyboard input automatically dumps to the output channel you choose (printer, mdv, flp, etc.), as well as to the screen.

If you have understood these first two articles, these should not be too difficult.

In the next article, we are going to deal with the whole matter of screen output control, clearing, scrolling, panning, csize, cursor position and so on. This will enable us to turn the visual impact of our programs into whatever our imaginations will allow. Happy coding!

```
;
; HEAP ALLOCATION BLOCK
;
.HEAP_ROOM          EQU       4096        ; HEAP ROOM REQUESTED
.HEAP_ADDR          DC.L      0           ; SPACE FOR HEAP ADDRESS
.HEAP_LENGTH        DC.L      0           ; SPACE FOR LENGTH OF HEAP SPACE
;
; ***************************************************************************
;                              'STRINGTR'
;
; FIRST WE FETCH THE STRING FROM THE INFILE
; ---- ALTER MOVE.L COMMAND TO 4(A7),A0 ----
.FILE_P             MOVE.L    4(A7),A0    ; INFILE_ID IN A0
; ---- ALTER NEXT FEW LINES TO HEAP_LENGTH AND HEAP_ADDR ----
; ---- RATHER THAN BUF_LEN AND BUFFER ----
                    LEA.L     HEAP_LENGTH,A1
                    MOVE.L    (A1),D2     ; LENGTH OF BUFFER IN D2
                    LEA.L     HEAP_ADDR,A1
                    MOVE.L    (A1),A1     ; BUFFER ADDRESS IN A1
                    MOVE.W    #$FFFF,D3   ; INFINITE TIMEOUT
                    MOVEQ     #$3,D0      ; #IO_FSTRG IN D0
                    TRAP      #3          ; FETCH STRING
                    MOVE.L    D0,-(A7)    ; SAVE ERROR RETURN ON STACK
;
; NEXT WE SEND STRING TO OUTFILE
;
                    MOVE.L    4(A7),A0    ; OUTFILE_ID IN A0
; ---- ALTER TO USE HEAP_ADDR RATHER THAN BUFFER ----
                    LEA.L     HEAP_ADDR,A1
                    MOVE.L    (A1),A1     ; BUFFER ADDRESS IN A1
                    MOVE.L    D1,D2       ; IO_FSTRG LEAVES THE NUMBER OF
                                          ; BYTES ACTUALLY FETCHED IN D1
                                          ; SO WE PUT THIS IN D2
                    MOVEQ     #$7,D0      ; #IO_SSTRG IN D0
                    TRAP      #3          ; SEND STRING
;
; AT THIS POINT WE NEED TO KNOW IF WE HAVE REACHED THE END OF THE FILE.
; SO WE EXAMINE THE ERROR RETURN SAVED ON THE STACK.
;
                    MOVE.L    (A7)+,D0    ; PUT ERROR RETURN BACK IN D0
                    TST.L     D0          ; ERROR?
                    BEQ.S     FILE_P      ; NO, THEN LOOP FOR NEXT STRING
;
; ***************************************************************************
;                                'CLOSE'
;
; ---- ALTER LABEL TO .CLOSE1 ----
.CLOSE1             MOVE.L    (A7)+,A0    ; CHANNEL ID IN A0
                    MOVEQ     #$2,D0      ; IO_CLOSE IN D0
                    TRAP      #2
;
; ---- DELETE BRA.S END_JOB ----
; ***************************************************************************
;                                'CLOSE'
;
; ---- ALTER LABEL TO .CLOSE2 ----
.CLOSE2             MOVE.L    (A7)+,A0    ; CHANNEL ID IN A0
                    MOVEQ     #$2,D0      ; IO_CLOSE IN D0
                    TRAP      #2
;
; ---- DELETE BRA.S END_JOB ----
; ***************************************************************************
;                                'CLOSE'
;
; ---- ALTER LABEL TO .CLOSE3 ----
.CLOSE3             MOVE.L    (A7)+,A0    ; CHANNEL ID IN A0
                    MOVEQ     #$2,D0      ; IO_CLOSE IN D0
                    TRAP      #2
;
                    BRA.S     END_JOB
;
; ***************************************************************************
;                               'ENDJOB'
;
.JOB_END            MOVE.W    #$CA,A2     ; UT_ERRO IN A2
                    JSR       (A2)
;
; THE NEXT PART IS THE NORMAL ENDING OF A JOB BY KILLING IT.
;
.END_JOB            MOVEQ     #$5,D0      ; MT_FRJOB IN D0
                    MOVEQ     #-1,D1      ; ID OF THIS JOB IN D1
                    TRAP      #1
;
; ***************************************************************************
; ---- THIS PART WAS MOVED TO THE END FROM INSTRING ----
; WE NEED 'BUFFER' FOR THE STRING AND 'BUF_POS' FOR THE STRING COUNT
;
.BUF_LEN            EQU       100         ; LENGTH OF INPUT BUFFER
;
.BUF_POS            DC.W      0
;
.BUFFER             EQU       *
;
;         **** NOTE ****  BUFFER SHOULD COME LAST OF ALL.
;
; ***************************************************************************
```

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